

05-30-00

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JC836 U.S. PTO

ATTORNEY DOCKET NO.: BASIIP2013

Patent Application Transmittal Sheet

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Robert J. Ward

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JC625 U.S. PTO
09/580536
05/26/00

In re Application of: Thomas W. McCaslin
Serial No.: Not Assigned
Filing Date: May 26, 2000
Group Art Unit: Not Assigned
Examiner: Not Assigned
Title: *Equipment Information System and Method*

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Sir:

Enclosed are:

- a cover sheet and a specification of 57 page(s) (including disclosure, claims and an abstract of the disclosure);
- one set of formal drawings, each consisting of 50 sheets of drawings (Figures 1 through 50);
- *a declaration of Tom McCaslin*
- Assignment with Recordation Form Cover Sheet
- postcard acknowledgment of receipt of papers by the Patent Office.

Patent Application
Inventor: Thomas W. McCaslin
Title: *Equipment Information System and Method*
Page 2 of Transmittal Sheet

Attorney Docket No. BASI.IP2013

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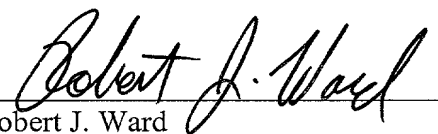
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Respectfully submitted,


Robert J. Ward
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Dated: ~~May 22, 2000~~ May 26, 2000 *RJW*

"EXPRESS MAIL" MAILING LABEL NUMBER: EL438567057US

DATE OF DEPOSIT: May 26, 2000

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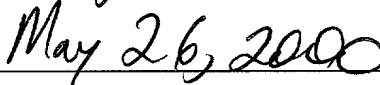
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UNITED STATES PATENT APPLICATION

ON

EQUIPMENT INFORMATION SYSTEM AND METHOD

BY

McCaslin, Thomas W.

BASI.IP2013 RJW

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EQUIPMENT INFORMATION SYSTEM AND METHOD

CROSS-REFERENCE TO RELATED APPLICATIONS

Pursuant to 35 U.S.C. § 119(e), this application claims the benefit of U.S. Provisional Patent Application No. 60/136,370 entitled *Equipment Information System and Method*, filed May, 28 1999, and named Thomas W. McCaslin as inventor, and is also hereby incorporated by reference for all purposes.

TECHNICAL FIELD OF THE INVENTION

This invention relates in general to the field of information systems and more particularly to an equipment information system and method.

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BACKGROUND OF THE INVENTION

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5 The management of equipment inventory involves many different tasks that begins with the procurement of equipment and ending with the retirement or sale of such equipment. During the useful life of equipment, various information related to the equipment and associated tasks may need to be tracked and monitored, including, for example, procurement, installation, location, repair, testing, transportation/shipping, monitoring, evaluation, 10 and historical record keeping. All of these present serious challenges to both unregulated and regulated companies. Regulated companies, such as electric utility distribution companies, must track, monitor, and evaluate additional information to meet regulatory requirements, 15 such as for economic regulation and environmental compliance.

20 Electric utility distribution companies, for example, must manage large amounts of expensive capital equipment, such as distribution transformers, which must be procured, shipped, installed, monitored, repaired, and tested across, often, large geographic areas, while complying with all regulatory requirements related thereto. An adequate inventory of such distribution transformers must be managed so that transformers are stocked and available at 25 appropriate locations when needed. A large volume of information is required to manage such equipment inventory and all of the associated tasks.

30 Equipment inventory, such as the electrical equipment mentioned above that is used by regulated electric utility distribution companies, are often extremely expensive and

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may account for a large portion of a companies overall assets. Such electrical equipment inventory may include, for example, transformers, voltage regulators, capacitors, relays, reclosures, and batteries. Excess equipment inventory may increase a companies overall holding or carrying costs, result in lower profits and lost investment opportunity, and may delay or reduce other needed capital expenditures. Inaccurate tracking and monitoring of equipment inventory could result in regulatory fines, such as those due to environmental violations and shipping violations.

Unfortunately, the tracking, monitoring, and evaluation of equipment inventory is often complex and involves many different systems due to the wide range of functions and tasks that are involved. This often requires software systems and multiple databases that must be constantly coordinated and synchronized to ensure accuracy and consistency in performing these tasks. These various systems are rarely, if ever, designed to work with one another and often only interface with one another through a manual process. This is expensive, cumbersome, and does not result in an optimal tracking, monitoring, and evaluation of equipment inventory.

The allocation of inventory at a central warehouse or central inventory location to fill orders from satellite warehouses or service centers can be complicated and time consuming. Once an order has been allocated, the transportation of large, and often expensive equipment, such as distribution transformers, present numerous challenges and opportunities for inefficiencies.

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SUMMARY OF THE INVENTION

From the foregoing it may be appreciated that a need has arisen for an equipment information system and method that allows equipment inventory to be efficiently and effectively tracked, monitored, and evaluated. In accordance with the present invention, an equipment information system and method are provided that substantially eliminate one or more of the disadvantages and problems outlined above.

According to an aspect of the present invention, an equipment information system is provided that includes various modules and a database that may include various tables of data or information. The various modules may include a table maintenance module, an inquiry module, an inventory module, a transportation module, and an installations/removals module.

According to another aspect of the present invention, a method for managing equipment information is provided that includes storing attributes of a piece of equipment in an equipment information database when the equipment is received at a central inventory location, adding an indication in the equipment information database that the equipment is available inventory, receiving an order for equipment needed at a service center that is of the same type as the equipment, and allocating inventory to the order based on available inventory in the equipment information database. The method may further provide shipping the equipment for the order to the service center, installing the equipment, updating the equipment information database to indicate that the equipment has

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been installed, removing the equipment, updating the equipment information database that the equipment has been removed, and shipping the equipment to the central inventory location.

5 The present invention provides a profusion of technical advantages that include the capability to efficiently and effectively track, monitor, evaluate, and manage equipment inventory. This may be achieved using a single database that includes multiple tables, or using
10 multiple databases.

Another technical advantage of the present invention includes the capability to quickly, efficiently, and accurately know the current status of your equipment assets, including inventory levels, so that these inventory
15 levels may be optimized to reduce or minimize overall holding or carrying costs.

A further technical advantage of the present invention includes the capability to automatically interface with other systems, such as, for example, a work management
20 information system, a procurement and accounts payable system, financial information management system, and a graphics systems. In this manner, database information that is common between the various systems is synchronized, accurate, and current, and duplication of effort is
25 minimized and overall efficiency is increased.

Yet another technical advantage includes the versatility to allow a company to provide better service by eliminating or minimizing situations where equipment is not
30 in inventory or is not available at the appropriate location when needed by a customer. Stated differently,

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equipment inventory may be better managed between locations, warehouses, or service centers to ensure that the right asset or equipment is at the correct location. Users are also provided the added advantage of being able, in one system, to quickly and efficiently identify the location and status of the most eligible piece of equipment to transport in the event of an emergency situation.

Another technical advantage of the present invention includes the capability to establish reasonable balanced performance measures to evaluate such metrics as quality, service, and costs. Further, the performance of the various equipment inventory locations can be evaluated, along with the performance of personnel, equipment vendors, equipment manufacturers, and suppliers.

Still other technical advantages of the present invention include the capability to: (1) provide automated reports that contain information for performance measures; (2) train a user in minimal time and cost because of the ease of use of the system; (3) provide historical equipment information that assists with regulatory compliance, such as environmental, transportation, and financial regulations; (4) automatically generate forms that assist with regulatory compliance and operational efficiencies, such as Department of Transportation ("DOT") forms and bills of lading; (5) provide enhanced security and reliability by limiting personnel to only those portions of the system in which they are concerned; (6) provide automatic order capability from service centers to the central inventory location; (7) provide automatic reorder capability to replace equipment used from the service

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5 centers for recent installations to ensure adequate inventory at service centers at all times; (8) automatically allocate orders for equipment to be provided from a central inventory location to a service center; (9) deallocate orders; and (10) provide the flexibility to operate in both a regulated, an unregulated, and a mixed regulated, unregulated environment. Other technical advantages are readily apparent to one skilled in the art from the following figures, description, and claims.

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BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and the advantages thereof, reference is now made to the following brief description, taken in connection with the accompanying drawings and detailed description, wherein like reference numerals represent like parts, in which:

FIGURE 1 is an overview block diagram of an exemplary embodiment of an Equipment Information System ("EIS") that is implemented as a Distribution Equipment Information System ("DEIS");

FIGURE 2 is a block diagram that illustrates various exemplary interfaces, including both I/O interfaces and interfaces with external computer systems, that may be provided with the DEIS;

FIGURE 3 is a diagram of an exemplary software architecture of an equipment information system;

FIGURE 4 is a diagram of an exemplary computer hardware configuration that may be used to implement an equipment information system;

FIGURE 5 is an overview diagram that illustrates a central inventory location and several exemplary routes to several service centers;

FIGURE 6 is a flow chart illustrating a method for managing equipment information for a transformer from "birth-to-death";

FIGURE 7 is a flow chart illustrating a method for processing, allocating, and filling an order according to an embodiment of the present invention;

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FIGURE 8 is a flow chart illustrating a method for filling and transporting equipment according to an embodiment of the present invention;

FIGURES 9 through 17 provide an exemplary set of Graphical User Interfaces (GUIs) that may be used provide inquiry module functionality;

FIGURES 18 through 21 provide an exemplary set of Graphical User Interfaces (GUIs) that may be used provide installations/removals module functionality;

FIGURES 22 through 27 provide an exemplary set of Graphical User Interfaces (GUIs) that may be used provide inventory module functionality;

FIGURES 28 through 32 provide an exemplary set of Graphical User Interfaces (GUIs) that may be used provide inventory module functionality that may only be accessed by certain users, such as at a central inventory location;

FIGURES 32 through 36 provide an exemplary set of Graphical User Interfaces (GUIs) that may be used provide transportation module functionality; and

FIGURES 36 through 50 provide an exemplary set of Graphical User Interfaces (GUIs) that may be used provide table maintenance module functionality;

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DETAILED DESCRIPTION OF THE INVENTION

It should be understood at the outset that although an exemplary implementation of the present invention is illustrated below, the present invention may be implemented using any number of techniques and that may be used to track, allocate, monitor, and evaluate virtually any type of equipment, such as, for example, electrical distribution equipment. The present invention should in no way be limited to the exemplary implementations, drawings, and techniques illustrated below, including the exemplary software and hardware design and implementation illustrated and described herein.

FIGURE 1 is an overview diagram 10 of an exemplary embodiment of an Equipment Information System ("EIS") that is implemented as a Distribution Equipment Information System ("DEIS") 24 for tracking, allocating, deallocating, monitoring, and evaluating the equipment inventory that is commonly found and used by electric utility distribution companies. In a preferred embodiment, the DEIS 24 is implemented using a distributed computer architecture, such as a client/server architecture, that provides "fat" client functionality and a centralized server database. The DEIS 24 may be implemented in a preferred embodiment using various modules and at least one database that will generally include various tables. For example, the DEIS 24 may include a table maintenance module 14, an inquiry module 16, an inventory module 18, a transportation module 20, and an installations/removals module 22. Each of these modules are implemented in software and provide various functionality which are described more fully below. It

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should be understood that the various modules illustrated in FIGURE 1 and described below may be implemented and organized as one or more programs, code, instructions, subroutines, objects, processes, methods, or any and all combinations thereof.

5 The table maintenance module 14 provides system maintenance functions for various tables contained within the main database of the DEIS 24. The inquiry module 16 is used to query the database and the various tables and information stored within the DEIS 24 so that both standard reports and ad hoc reports may be generated. In one embodiment, the inquiry module 16 is implemented using a database management software tool such as MICROSOFT ACCESS, while the main database of the DEIS 24 is implemented as an ORACLE database.

10 The inventory module 18 provides the capability to receive, track, allocate, deallocate, monitor, and evaluate equipment and orders, such as electrical distribution equipment including, for example, transformers, capacitors, switch gear, oil switches, regulators, reclosures, batteries, and voltage regulators, and any other equipment used in or in connection with a business. The inventory module 18 may also provide, assist, or interface with the capability to track the location of this equipment between various service centers or locations. It will, in a preferred embodiment, provide current information as to the inventory not only at a central inventory location or central warehouse, but at satellite warehouses or service centers, sites, yards, or locations.

15 The transportation module 20 provides the management

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and tracking functionality of the transport of equipment from one location to one or more other locations, for example, from a central location or center, to various satellite locations or centers. This may include, for example, the automatic generation of bills of lading, and loading documents. The central location, where equipment inventory may be generally received and distributed to other locations, may also be the location where equipment is repaired, maintained, transported, retired, tested, and where any number of other functions are performed.

The installations/removals module 22 provides the functionality to manage or determine whether a piece of equipment is installed or is in service, or has been removed or is out of service. It may also include the capability to provide additional equipment information such as the field location number, which indicates the geographic or physical location of the equipment in service, such as the physical location on or in the electrical distribution system where the equipment is installed or located. In one embodiment, the installations/removals module 22 may interface with an external interface of external interfaces 12, such as a distribution information system, a work management system, or a graphical information system. For example, the graphical information system, which is illustrated in FIGURE 2 and described more fully below in connection therewith, may interface with the installations/removals module 22 of the DEIS 24 to exchange information. For example, when a transformer (or other equipment) is installed in a distribution circuit of an electric utility

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distribution company, the installations/removals module 22 may provide various attributes or information to the graphical information system. This provides the significant advantage of eliminating the need to enter the same information in multiple systems, ensures data consistency across systems, and, often, will result in more accurate data.

The DEIS 24 may also interface with any of a number of other computer systems through any of a variety of known or available interfaces, as represented by the external interfaces 12, to both receive and/or deliver or exchange information. Further, the DEIS 24 may include any number of available input/output mechanisms which allow for data to be input or output from the system such as, for example, graphical user interfaces ("GUIs"), bar code devices, and electronic inputs such as batch file exchanges.

FIGURE 2 is a block diagram 50 that illustrates various exemplary interfaces, including both I/O or user interfaces and interfaces with external computer systems, such as the external interfaces 12, that may be provided with the DEIS 24. The various user interfaces include the user interfaces 52, where a user may simply and conveniently access various GUIs of the DEIS 24, each such GUI being normally associated with one or more of the modules of the DEIS 24, to access and/or exchange information with the DEIS 24. A laptop or remote interface 54 is shown that allows a user or field personnel to provide various inputs to the DEIS 24 in an off-line mode and later dock or connect with the DEIS 24 where the information may then be downloaded to the DEIS 24.

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The DEIS 24 may also interface through the external
interfaces 12 with an external system that provides
financial and/or property accounting functions. This is
represented by a Financial Information Management
5 System 60, which, in one embodiment, is a property
accounting system that provides property accounting
functions, such as those that are required by both a
regulated and an unregulated entity. In this manner,
information is automatically and seamlessly provided
10 between two separate systems so that information is
accurately updated and maintained between the two systems.

An interface to another external system is indicated
by a Procurement and Accounts Payable System ("PAPS") 62.
The PAPS 62 allows the DEIS 24 to request that certain
15 equipment be ordered through the PAPS 62 so that PAPS 62
may generate an appropriate purchase order for use in
ordering the requested equipment. The PAPS 62 also may
track accounts payable after such purchase order has been
receive or after an invoice has been received for an
20 equipment manufacturer. In other embodiments, the various
functionality of the PAPS 62 may be provided in two or more
separate external systems.

A bar code interface 58 is illustrated in FIGURE 2 and
represents the fact that a bar code scanner may be used to
25 input various information into the DEIS 24. The bar code
interface 58 may also be used to supply information
simultaneously or nearly simultaneously to a separate
system such as the PAPS 62. For example, the bar code
interface 58 may be used to scan and input equipment
30 nameplate information, such as, for example, the

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manufacturer, the serial number, and other attributes of the equipment. This may be used by the DEIS 24 to track the location and the transportation of the piece of equipment that has been received. The PAPS 62 and the DEIS 24 may be used in conjunction when a piece of equipment, such as a transformer, is originally received from a vendor or manufacturer. Input information, such as the serial number and other identifying and desired information, may be input into both the PAPS 62 and the DEIS 24 using the bar code interface 58. The PAPS 62 may use this input information so that accounts payable may be properly adjusted to reflect that a payment is due to the appropriate vendor or manufacturer of the received equipment. The DEIS 24 now has an initial record of the equipment to begin tracking and managing the "birth-to-death" associated information of the equipment and to ensure that equipment orders received internally are properly processed and equipment is delivered to desired service centers or subcenters as requested.

Finally, the DEIS 24 may also interface with a distribution information system that may include the capability or functionality of either or both a Work Management Information System ("WMIS") 64 and/or a Graphical Information System ("GIS") 56. The WMIS provides the capability for personnel in the field, such as engineering personnel, to estimate the particular needs of a job such that the job equipment estimation system will in turn generate the required equipment that is estimated to be needed for the job. The WMIS 64 may then, once a job is approved, provide such equipment needs to the DEIS 24

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along with a need date and location. The DEIS 24 will then generate an order from the In other embodiments, the DEIS 24 may provide inventory and/or availability information to the WMIS 64. In one embodiment, information is not provided from the WMIS 64 until the particular job that has been estimated has been approved in the WMIS 64, which indicates that the need to order such equipment is more certain.

An interface to an external computer system is indicated by the GIS 56, which represents an external graphics system that, in one embodiment, provides one line graphical representations of an electrical distribution system that may be used to generate one line charts, and that includes information about the physical and electrical characteristics of a distribution system so that engineering studies may be run. The DEIS 24 may automatically provide such information to the GIS 56 to eliminate the need for a user to provide such information manually into the GIS 56. This also provides the added and significant advantage of ensuring that information in two independent systems remains current and synchronized.

FIGURE 3 is a diagram of an exemplary software architecture of an equipment information system 80, such as the DEIS 24. Along the left side of **FIGURE 3** are representative GUIs or windows 110 through 116, such as the GUIs described herein in connection with **FIGURES 9** through 50. Each of the GUIs has an associated logic that may be developed as scripts using a programming tool called POWERBUILDER by SYBASE. These scripts may result in the generation of objects, such as objects 82 through 104, for

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use by such GUIs as is illustrated.

One or more of the GUIs and their associated logic, which is contained in the one or more objects that are associated with each GUI, may be grouped into modules or libraries, such as the exemplary groupings discussed above for the five modules of the exemplary DEIS 24 illustrated in FIGURE 1 and discussed above. For example, a module 118 is shown that includes GUI or windows 110 through 112, and corresponding objects 82 through 92, which provide, in one embodiment, event driven logic based on a user's selection on the associated GUI. This logic may be a database query, a mathematical operation, a sort, or virtually any available and desired logic.

The DEIS 24 may be implemented using any number of available software development and programming tools such as, for example, POWERBUILDER or VISUAL BASIC by MICROSOFT. In one embodiment, POWERBUILDER may be used to develop an individual library for each of the five modules discussed throughout and as illustrated in FIGURE 1 such that all of the GUIs and their associated logic or objects for each module are contained in the individual library. These individual libraries are referred to as POWERBUILDER libraries and are designated with a "pbl" extension. A build may then be performed with all of the five libraries, and some of the standard libraries provided with POWERBUILDER to generate a single executable file. Depending on a desired hardware configuration, this single executable file may be distributed to virtually any client that can access a server through a network, such as a local area network, a wide area network, a token ring network,

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and the like.

A database 120 of the equipment information system 80 is shown such that it can exchange information to and from the various GUIs and objects of the modules or libraries as illustrated in FIGURE 3. Preferably, the database will be implemented as a relational database at a server and will include a database manager such that the objects of the various GUIs and modules may initiate various database commands to interrogate the information and various table of the database. The database manager also preferably provides for stored procedures, such as stored procedure 122, to be developed and executed such that stored procedures may also access the information of the database. The stored procedures may be initiated automatically, such as at defined or periodic intervals, through other stored procedures, or through objects of the GUIs. In a preferred embodiment, the database is implemented as an ORACLE database manager at a server and the executable code is provided at one or more clients.

External interfaces 124 includes both I/O interfaces and interfaces with external systems, and may also initiate stored procedures and may communicate or exchange information with the various modules and their GUIs and objects. This is also illustrated in FIGURE 3.

FIGURE 4 is a diagram of an exemplary computer hardware configuration that may be used to implement an equipment information system 140, such as the DEIS 24 discussed above. In the preferred embodiment shown, various clients may communicate with a server 152 and each of the clients has an executable that provides the five

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modules discussed above along with their associated GUIs and objects. Each of these clients preferably operate under a WINDOWS or equivalent operating system that provide a GUI. An information client 142, a corporate client 144, a service center #1 client 146, a service center #n client 148, and a central inventory location client 150 are shown in FIGURE 4. The client software at the central inventory location client 150 will, in a preferred embodiment, contain or provide access to more functionality, especially in the inventory module to provide such functionality, for example, as manual allocation of orders. The central inventory location client 150 may also exclusively provide access to load creation GUIs, and associated objects, to provide load creation functionality as part of the transportation module or the inventory module.

In the preferred embodiment, because the vast majority of the executable code for the equipment information system 140 resides on the client, the clients may be referred to as "fat" clients. The server 152 will host a equipment information system database 154 using a database management tool, application, or system, such as an ORACLE database manager 156. This allows for stored procedures 158 to be run at the server 152 that act on the data in the database 154 and associated tables. The stored procedures 158 may be setup to execute automatically, such as every night, through another stored procedure, or on demand when selected or initiated through a window or GUI. In still other implementations, the stored procedures may be implemented by external systems through an interface with the external system, not shown in FIGURE 4

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An off-line, near real-time version or copy of the equipment information database 154 may also be provided and accessed by a separate database manager 160 that may or may not be located or active at the server. For example, MICROSOFT ACCESS may be used to access the DEIS database 154 to generate virtually any desired report. This may be referred to as a report manager.

FIGURE 5 is an overview diagram 200 that illustrates a central inventory location 202 and several exemplary routes to several service centers. The present invention may be used in such a system to manage the transportation, generally using the transportation module, to manage the transportation of equipment from the central inventory location 202 to various service centers on a route, and to retrieve equipment from such service centers to transport to the central inventory location 202.

A route to supply and retrieve equipment, such as distribution equipment like an electrical transformer, is generally defined and driven using a truck/trailer combination. A route 218 is illustrated with a dashed line connecting the central inventory location 202, a service center 204, which serves a service area 216, a service center 206, and a service center 208. Similarly a route 220 is illustrated with a dashed line connecting the central inventory location 202, a service center 210, a service center 212, and a service center 214. It should be noted that even though only service center 216 is shown in FIGURE 5, generally, each service center will be responsible for a certain defined service area or areas.

FIGURE 6 is a flow chart illustrating a method

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600 for managing equipment information for a transformer from "birth-to-death". The method 600 begins at block 602 and proceeds to block 604 where a new transformer is received at, for example, a central inventory location.
5 Next at block 606, the nameplate of the transformer is entered into the equipment information system using, preferably, a bar code scanner. The information may include a serial number, manufacturer, an SKU number, and virtually any available or desired information.

10 The method 600 proceeds next to block 608 where an order is entered or generated, either manually or automatically, into or by the equipment information system for a transformer. At block 610, the order is allocated by the equipment information system as to inventory at the
15 central distribution location. The transformer is then shipped to a service center. At block 612 the transformer is installed into an electrical system and is in service. The method 600 proceeds next to several decision blocks 614, 618, 622, and 626 where, generally the transformer is
20 monitored to see if for any reason, such as, for example, the transformer becomes overloaded, fails, needs a test performed (such as a test for PCB in transformer fluids), or for any other reason needs to be taken out of service. If yes, the transformer is generally removed and replaced, as
25 is clear in the flow chart of the method 600. At such point in time the transformer is no longer serviceable or repairable, as is shown in decision block 630, the transformer is retired and properly disposed as required. The method 600 ends at block 634.

30 **FIGURE 7** is a flow chart illustrating a method 700 for

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processing, allocating, and filling an order according to an embodiment of the present invention. The method 700 begins at block 702 and proceeds to block 704 where an order is received or generated in the equipment information system.

5 Orders may be manually entered into the equipment information system, automatically generated to reorder equipment at a service or satellite center, or through an external interface. The method 700 proceeds next to decision block 706, where it waits until such time as an
10 order is found to eligible for allocating. In a preferred embodiment, the order contains the need day or date for the ordered or requested equipment. Until such time as the actual date approaches a window leading up to the need date, the order is not eligible to be allocated. After such time
15 the order is eligible to be allocated.

Proceeding next to decision block 708, where it waits until such time as inventory is available, normally at a central inventory location, to be allocated to this order. When the inventory is available the order is allocated at
20 block 710. The allocation is not necessarily corresponded to individual equipment, but classes of available equipment, such as by the number of available equipment of a particular type as classified by an SKU or other identifying number.

If certain events happen, such as emergency conditions,
25 previously allocated orders may be deallocated, as indicated by block 716. This may be done manually, or automatically according to some criteria. The order is filled and shipped in block 712, and the method 700 ends at block 714. Allocation may be achieved through various ways, such as by
30 using stored procedures.

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It should be noted that the allocation may not specifically identify individual pieces of equipment by their unique identifier, such as their unique company number, at this time. Deallocation may also occur if an order is canceled. In the event that the threshold time period before the order is to be filled has been met and the allocation has occurred, if the order is later canceled, the allocation can then be deallocated. This is automatically achieved once the order is canceled. Equipment inventory may also be manually deallocated if a user determines that even though a prior allocation has already occurred, a superior or more urgent need for the equipment exists. In such a case, a user may access a manual GUI in the DEIS 24 and deallocate a certain quantity of units of a particular stock order number.

The allocation/deallocation processing, in addition to what was described above, may also provide partial allocations, such as when insufficient inventory is on hand when an order must be allocated and/or shipped. It can process substitute stock order numbers, provide capability to handle order cancellations and work request cancellations, such as work request cancellations from a job equipment estimation system such as WMIS. All of this functionality may be achieved through the use of stored procedures to manipulate a database and with the use of logic to perform additional functions and to perform database manipulations. Some of the processing involved in the allocation or deallocation processing involves the use of batch processing, while other needed processing may be provided on demand or as needed.

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FIGURE 8 is a flow chart illustrating a method 800 for filling and transporting equipment according to an embodiment of the present invention. The method starts at 802 and proceeds to 804 where a load is created, which means allocated orders are now associated with individual items of equipment. The equipment is scanned at block 804, loaded on a truck at block 808, a transportation report, such as a bill of lading is generated and other reports for the particular route and various service center stops are generated as needed or required.

The equipment is delivered to a service center on the route at block 810, any equipment scheduled to be picked up is done so at block 814 for shipment back to the central inventory location, and the method ends at block 816.

FIGURES 9-17 provide an exemplary set of Graphical User Interfaces (GUIs) that may be used provide inquiry module functionality. In general, this module provides the flexibility to develop virtually any inquiry to check on almost any aspect of the DEIS 24. Various tables of the database of the DEIS 24 may be interrogated to generate output results.

FIGURE 9 illustrates a Tree View Menu GUI and an Inquiry GUI. The Tree View Menu GUI is a diagram of screen inputs that includes a menu, similar to **FIGURE 1**, which may be referred to or thought of as the main menu of the DEIS 24. As illustrated, this includes selections for the inquiry module, the installations/removals module, the inventory module, the SOS transactions module (which provides additional access or makes available certain GUIs relevant to a central inventory location and, in one

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embodiment, related primarily to the inventory module), the transportation module, and the table maintenance module. Each of the GUIs and their functions are discussed below.

Once the inquiry module is chosen, the user is presented with the Inquiry GUI as illustrated in FIGURE 9. The Inquiry GUI provides three fields to possibly receive input. This includes the company number, which may be a unique identifier for each piece of equipment, a serial number, and a field location number. A user may enter information in any one of the three input fields. For example, if the number 93 is entered in the serial number field along with a wild card to request all records that include the number 93, an output result may be displayed that is similar to what is shown in FIGURE 9. The Inquiry GUI uses various tables within the DEIS 24 database, which are annotated on all of the exemplary GUIs of FIGURES 9 through 44. Thus, each of the tables that are affected, associated with, and/or queried by a GUI of the DEIS 24 is written beside the associated GUI. Further, Exhibit A, which is attached hereto, includes a chart that highlights and correlates each GUI or screen of the DEIS 24 with the associated tables of the database of the DEIS 24.

FIGURE 10 illustrates an Detail GUI and a History GUI. The Detail GUI allows a user to input a company number, which is a unique identifier for a particular piece of equipment, such as a transformer, and presents all of the associated information that is shown in FIGURE 10 as an output. This may include the serial number, the field location number, the status of the piece of equipment, the manufacturer of equipment, the grid location number, the

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purchase date, and any of a variety of other desired information.

5 The History GUI allows the user to enter a unique company number for a particular piece of equipment and receive historical information as an output. For example, the History GUI of FIGURE 10 illustrates the case where the equipment that identified by the unique company number is shown to have been installed on 12/7/93 is available.

10 **FIGURE 11** illustrates an Installation History GUI and a Removal History GUI. The Installation History GUI allows a user to provide a company number of a particular piece of equipment and to receive detailed installation history as an output. Installation History may also be retrieved from the History GUI of FIGURE 10 by selecting history detail on this
15 GUI.

20 The Removal History GUI is similar to the Installation History GUI and provides more detailed history in the event that a particular piece of equipment had been removed from service in the past. FIGURES 12 through 14 all illustrate various specific history GUIs that operate similarly to the GUIs just described in FIGURE 11. That is, the user may either enter a unique company number that identifies a particular piece of equipment directly into thses GUIs, or get to them from the History GUI of FIGURE 10. For example,
25 if a particular piece of equipment had a transfer history, a name plate maintenance history, a repair history, a test results history, or a reclassification history, as illustrated by the various GUIs of FIGURES 12 through 14, this information would be provided as a record or a line in
30 the History GUI of FIGURE 10. This line or record could be

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highlighted and then the desired history detail could be selected to display the desired history GUI of FIGURES 11 through 14, where the specific information would be displayed.

5 **FIGURE 14** illustrates a Reclassification History GUI and a On-dock Quantities by Location and TSN GUI. The Reclassification History GUI provides detailed history information for each piece of equipment or any desired piece of equipment relating to its classification or association with any particular business unit or business entity.

10 The On-Dock Quantities by Location and TSN GUI provides an input screen with input fields, such as the six input fields shown in FIGURE 14, so that a user may enter information in one or more of these fields to develop a search query or criteria to receive any desired information.

15 The term on-dock is synonymous as physically present at a particular location, regardless of its status.

20 **FIGURE 15** illustrates an On-Dock Quantities by Location and TSN Output GUI and an Outstanding Orders GUI. The On-Dock Quantities by Location and TSN Output GUI provides the graphical output results of the search or query that was performed and the On-Dock Quantities by Location and TSN GUI of FIGURE 14.

25 The Outstanding Orders GUI provides an input screen so that a query or criteria can be set up to determine which orders have been placed but not yet filled. These are referred to as outstanding orders.

30 **FIGURE 16** illustrates an Outstanding Orders Output GUI and a TSNs Not Auto Re-Ordered by Yard GUI. The Outstanding Orders Report GUI is simply the graphical output result of

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the search that was performed by the criteria or query that was set up in the Outstanding Orders GUI of FIGURE 15.

5 The TSNs Not Auto Re-Ordered by Yard GUI allows the user to choose a location, warehouse, service center, or the like to perform a query on the database to retrieve those pieces of equipment that have not been automatically re-ordered. Certain equipment, which are identified by unique stock numbers or TSN stock numbers, may be tagged so as not to be automatically re-ordered even in the event that such equipment is shipped and installed, and thus no longer available.

10 **FIGURE 17** illustrates an Install/Remove/Changeout Report GUI and an Associated Install/Remove/Changeout Report Output GUI. The Install/Remove Changeout Report GUI allows a user to input a particular location, such as a warehouse or service center, and a date range to generate a report. The Install/Remove/Changeout Report GUI illustrates such a report, which is provided as a graphical user interface and provides all the information for that location and for the date range as selected in the Install/Remove/Changeout Report GUI. In effect, this provides an activity report for all of the equipment that was either installed, removed, or changed out during the particular date range that was selected.

15 **FIGURES 18-21** provide an exemplary set of GUIs to achieve the installations/removals module. In general, this module allows for equipment installations and equipment removals to be properly tracked, monitored, and evaluated. The installations/removals module also provides the ability to interface with another system, such as a graphics system,

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to display or provide line drawings of an electrical distribution system. For example, INTERGRAPH provides graphical software to display one line drawings and the like of electrical distribution system, and to provide load flow or transformer loading engineering studies to track and monitor the loading and performance of the electrical distribution system.

FIGURE 18 illustrates an Install GUI and a Removal GUI. The Install GUI allows a user or installer, such as field personnel, to enter appropriate information after installing or while installing a particular piece of equipment. The Removal GUI allows a user to locate a particular piece of equipment, such as a distribution transformer, in the database that has been removed from service so that the information associated with this piece of equipment may be updated to include such things as where the removed equipment will be stored.

FIGURE 19 illustrates a Removal Output GUI and a Changeout GUI. The Removal Output GUI is simply the output screen that assists a user with selecting the appropriate piece of equipment that is to be removed. For example, if a user does not know the exact unique identifier of a piece of equipment, which may be a company number, various wild cards may be used in the search performed at the Removal GUI of **FIGURE 18** to narrow the search results. The search results are then displayed in the Removal Output GUI so that a user may then select the exact piece of equipment that is being removed. The Changeout GUI is identical to the Removal GUI of **FIGURE 18** and is used instead of the Removal Output GUI whenever a piece of equipment is being exchanged

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or changed out, instead of being removed.

FIGURE 20 illustrates a Changeout Output GUI that provides a removal sub-GUI and a Changeout GUI that provides an install sub-GUI. The Removal sub-GUI is similar to that which was just described above for selecting the appropriate piece of equipment to be removed in connection with the removal GUIs of FIGURE 18 and FIGURE 19. The Install sub-GUI is identical to the Install GUI as discussed above with respect to the Install GUI of FIGURE 18. Thus, the Changeout GUIs of FIGURES 19 and 20 are simply combinations of the Install and Removal GUIs previously discussed.

FIGURE 21 illustrates a Laptop Errors GUI and a DIS/DEIS Transformer Discrepancies GUI. These two GUIs provide error or discrepancy information in connection with two separate interfaces. The various GUIs described in FIGURES 18 through 20 may be provided on a laptop or portable computer that operates independent of the DEIS 24 as shown in FIGURE 1 and in FIGURE 47 below. In this manner, users or field personnel may more conveniently enter information while out in the field. This also improves accuracy and timeliness of the data because pertinent equipment information can simply be entered directly from the nameplate of the equipment without having to transfer such information to paper and then enter it into the DEIS 24. Once all the information has been entered in the various GUIs described in FIGURES 18 through 20, this information may be input into the DEIS System 24 through a batch process in such a manner that when the field personnel returns and connects directly to the DEIS 24, this information is then uploaded to the DEIS 24. A stored

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database procedure may be used to implement this functionality. In the event that there is erroneous data, the Laptop Errors GUI of FIGURE 21 will illustrate such errors. In such a case, a user may then take appropriate action to correct the errors. This may be done by selecting the detail as shown on the Laptop Errors GUI so that a user may then correct the errors. This ensures that errors can be quickly and conveniently corrected. The DEIS 24 may perform any of a variety of checks to flag errors. This may include determining whether an entered value is a valid entry or checking to see if data for a particular piece of equipment has not been erroneously changed.

The DEIS/DEIS Transformer Discrepancies GUI provides an output report that highlights any discrepancies or data errors that were encountered during the process of providing information to the graphics system through the graphics interface. For example, if a particular transformer is marked as being located at a first Field Location Number or ("FLN") and the graphics system indicates that it should be located at a different or second field location number, a discrepancy record is generated and is shown as illustrated in FIGURE 21. These may then be quickly and conveniently corrected, if needed.

FIGURES 22-27 illustrate various exemplary GUIs to achieve the functionality of the inventory module 18. Generally, the inventory module provides a mechanism to track, monitor, and evaluate equipment inventory. The inventory module 18 also allows or provides the capability to order inventory and update inventory information. Ordering inventory refers to the process of a satellite or

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non-central locations ordering equipment from a central hub or central location. For example, service centers in a electricity distribution company may order needed or desired equipment inventory from a central location or central warehouse.

FIGURE 22 illustrates an Order Review GUI and an Order Review Output GUI. The Order Review GUI provides an input screen so that a query or search criteria can be established to search for orders that have already been entered into the DEIS 24. There are three ways in which orders may be entered into the DEIS 24. These include receipt of an order from an interface from an outside system, such as a job equipment estimation program, through an automatic inventory order function provided by the DEIS 24 using a stored procedure or the like, or through a direct order entry input entered by a user of the DEIS 24.

The Order Review Output GUI provides a list of records that meet the criteria of the query that was entered in the Order Review GUI above. From the Order Review Output GUI, the various orders may be evaluated and modified if desired.

FIGURE 23 illustrates an Order Entry GUI and an On Dock Transformers GUI. The Order Entry GUI is the interface in which a user of the DEIS 24 may enter an order into the system. In the Order Entry GUI as shown in **FIGURE 23**, a user may enter the type of equipment that is desired. This may be done through the selection of a unique TSN or stock number and the destination where the equipment is to be delivered or is needed. The date that the equipment is needed is also entered through the Order Entry GUI.

The On Dock Transformers GUI provides an input screen

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to allow a user to develop a query or establish a search criteria to select information as to the physical presence or on-dock availability of certain equipment at certain warehouses, service centers, or locations.

5 **FIGURE 24** illustrates an On-Dock Transformers Output GUI and a Ship/Receive GUI. The On-Dock Transformers Output GUI provides the records that meet the criteria of the search that was performed using the On-Dock Transformers GUI in **FIGURE 23**. The On-Dock Transformers Output GUI also
10 allows for any of the records that meet the search criteria to be modified or to have various status information changed. For example, a transformer or other piece of equipment that has been damaged and thus has a status that indicates the equipment has been damaged, the disposition of
15 such equipment may be indicated by using the On-Dock Transformers Output GUI. This disposition, for example, may indicate that the transformer or equipment is being shipped to a particular location or service center for repair. The disposition may include any of a variety of statuses such
20 as, for example in-transit and ready-to-ship. Once a particular piece of equipment has had its disposition changed to ready-to-ship, it may now be viewed as part of the Ship/Receive GUI. The Ship/Receive GUI allows for searches to be performed to determine the status of
25 shipments between various locations, warehouses, or service centers. The from and to destinations may be indicated and the desired status and disposition may also be selected.

FIGURE 25 illustrates a Ship/Receive Output GUI and a Nameplate Maintenance GUI. The Ship/Receive Output GUI
30 provides an output report of the various records or data

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that meet the criteria that was selected on the Ship/Receive GUI of FIGURE 24. The Nameplate Maintenance GUI allows a user to view and modify the information associated with a piece of equipment's nameplate.

5 **FIGURE 26** illustrates a Retirement/Retirement Reversal GUI and an Oil Test Results GUI. The Retirement/Retirement Reversal GUI allows for equipment that was thought to have been previously lost or inadvertently retired to be redesignated as not retired. Further, the Retirement/Retirement Reversal GUI allows a piece of equipment to be retired. In this manner, the information associated with this piece of equipment will indicate that the equipment has been retired. This information may prove useful in a regulated industry to provide information to a separate property accounting system so that equipment can be properly accounted for as being included in or not included in the rate base of a company.

10 The Oil Test Results GUI allows for oil tests or, in other embodiments, other environmental tests, to be entered and associated with a piece of equipment. For example, Logical Transformers often include oil as their insulators and this oil may be periodically tested for environmental contaminants. This information or these test results may be saved and stored with each transformer. This historical information may prove very useful in efficiently and economically complying with any of a variety of local, state, and federal environmental regulations.

25 **FIGURE 27** illustrates a Crew GUI and a Crew Yard GUI. The Crew GUI is simply a table of information of the various crew members in which a transformer may be issued or a list

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of equipment may be issued. The Crew Yard GUI associates each crew name provided in the Crew GUI with a particular location, warehouse, or service center.

5 FIGURES 28 through 32 provide an exemplary set of
Graphical User Interfaces (GUIs) that may be used to provide
inventory module functionality that will, in a preferred
embodiment, be accessible only by certain DEIS users, such
as DEIS users at the central inventory location 202
10 illustrated in FIGURE 11. The central inventory
location 202 may be thought of as central hub or central
location that may provide storage, maintenance, and shipping
services for the equipment so that other warehouses or
locations, normally satellite locations, may receive and
transport equipment from and to the central location. The
15 various functions that may be performed at such a central
hub may include adding new equipment, filling purchase
orders, testing equipment, changing the status information
of equipment, adding found equipment, repairing equipment,
reclassifying equipment, and any number of other activities
20 that may be performed at a central hub or central location.

 FIGURE 28 illustrates an Add New Transformers GUI and
a Fill Orders GUI. The Add New Transformers GUI allows for
the receipt of new equipment, such as transformers in this
case, to be added to the database of the DEIS 24. When a
25 new transformer is received, a separate procurement and
accounts payable system that may track such items as
purchase orders may be notified that the transformer or
other equipment has been received so that the appropriate
vendor or manufacturer may be paid. Similarly, the receipt
30 of a new transformer in a regulated industry, such as a

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regulated electric utility, may require that the received equipment be added to the rate base or capitalized. In one embodiment, a separate property accounting system may receive information that the additional equipment or property has been received and thus should be added to the rate base.

The Fill Orders GUI allows a central hub or location, such as a central inventory location, to meet or fill the orders or requests from the various other locations or service centers that are requesting equipment from the central hub or central inventory location. For example, the Arlington Service Center may be selected in the location field and all orders requested for the present time period may be viewed and a particular piece of equipment may be designated as the piece of equipment that will be used to fill the order. In one embodiment, the status of the particular piece of equipment is changed to ready-to-ship, indicating that the piece of equipment has been designated to meet a particular order and is designated for another location.

FIGURE 29 includes a Mass Retirement GUI and a Mass Status Change GUI. These two GUIs simply provide a convenient means in which to change the status of a large number of pieces of equipment at one time. The Mass Retirement GUI allows multiple pieces of equipment to be retired at once, while the Mass Status Change GUI allows multiple pieces of equipment to have their status changed at once.

FIGURE 30 illustrates an Add Found Device GUI and a Repair GUI. The Add Found Device GUI allows a piece of

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equipment that, for whatever reason, is not entered into the database of the DEIS 24 and has not been recorded. In this manner, the particular piece of equipment is now provided as a record in the database of the DEIS 24 so that it may be tracked, monitored, and evaluated like all of the other pieces of equipment. The Repair GUI allows for information relating to repair work that was performed at the central location or under the direction of the central location to be entered and retained with the piece of equipment as historical data. In this manner, over a period of years, historical repair data may be retained such that a complete history of a transformer's repairs may be gathered and maintained and easily accessed through the DEIS 24.

FIGURE 31 illustrates a Company Number Change GUI and a Reclassification GUI. The Company Number Change GUI in the exemplary embodiment illustrated by the DEIS 24, provides a mechanism to change the company number ID. The company number ID, in the exemplary embodiment illustrated, provides the unique identifier for each piece of equipment. The Reclassification GUI provides a mechanism to reclassify the ownership of a particular piece of equipment from one business entity to another. For example, in a regulated environment, certain equipment may be counted as part of a rate base while equipment owned by other entities may not. In the event that equipment, such as transformers, is transferred from one entity to the other, the rate base would need to reflect the same accordingly. Anytime that a reclassification occurs, information may be sent to an outside system via an interface to indicate such a reclassification. In one embodiment, the property

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accounting system, which tracks the equipment that should be included as part of the rate base in a regulated entity, is notified of the reclassification change and is updated accordingly.

5 **FIGURE 32** illustrates the last GUI of the inventory module that concerns the central inventory location in the exemplary embodiment illustrated herein. **FIGURE 32** illustrates a TSN Mfg Template GUI. The TSN Mfg Template is simply a table that lists all of the available TSN numbers.
10 A TSN number may simply be thought of as a stock number or as a SKU that uniquely identifies a particular class and type of product or equipment.

FIGURES 32-36 provide exemplary GUIs to carry out the various functions performed by the transportation module 20.
15 The transportation module provides such functions as assistance with managing transportation loading, transportation routing, driver planning, generating loading documents that assist the driver and the receiving party with what is being transported, generating bills of lading
20 to comply with Department of Transportation regulations which, among other things, provide certain weight limits and weight restrictions.

FIGURE 32 illustrates a Load Detail GUI, which is the first GUI in the transportation module 20. The Load Detail
25 GUI receives route information and requests for either all loads currently planned or in transit or specific load numbers that are planned or are in transit and provides a report of various orders that have both been assigned to a load and those that have not yet been assigned to a load.

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FIGURE 33 illustrates a Create/Update Loads GUI and a Driver GUI. The Create/Update Loads GUI allows a user to create new truck loads and to update or modify previously created loads. The Create/Update Loads GUI also allows for the status as to whether the load is in transit or planned to be changed. Reports may also be generated from the Create/Update Loads GUI so that bills of lading and loading reports may be generated and physical printouts may be provided to the truck drivers. The Driver GUI simply lists all available drivers and their default truck number.

FIGURES 34-36 provide the final GUIs for the transportation module 20 and provide access to various tables so that information may be viewed and certain information may be modified. These GUIs provide access to such information as stock numbers or TSN numbers of other equipment, route information, which includes cut off day and cut off hour information, shipper information, trailer information, including trailer weight capacities and other identifying information, and truck information.

FIGURES 36-50 include various exemplary tables that are used to carry out the functions of the table maintenance module 14. In general, these various tables provide user access to various tables of the database of DEIS 24 that include information that a user has the authority to modify. This information includes such information, for example, as equipment manufacturer information, activity descriptions, status codes based on activity and activity reason selections, crew information, security information, yard, warehouse, or location security, and equipment specifications such as KVA ratings and oil type. The tables

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also contain such information as reason codes, repair information, service area descriptions, transformer tap code information, transformer phase information, stock number or TSN information, user security, and virtually any other information that is desired.

Thus, it is apparent that there has been provided, in accordance with the present invention, an equipment information system and method that allows for equipment inventory to be tracked, monitored, and evaluated more efficiently and effectively, and that satisfies one or more of the advantages set forth above. Although the preferred embodiment has been described in detail, it should be understood that various changes, substitutions, and alterations can be made herein without departing from the scope of the present invention, even if all of the advantages identified above are not present. For example, the system may be implemented using a different software architecture and the various functions and modules may be combined and rearranged in any number of ways. The system of the present invention may be implemented using a client/server configuration as described herein, or using a central processing configuration or less distributed configuration. Also, the techniques, systems and sub-systems described and illustrated in the preferred embodiment as discrete or separate programs and processes may be combined without departing from the scope of the present invention. Other examples of changes, substitutions, and alterations are readily ascertainable by one skilled in the art and could be made without departing from the spirit and scope of the present invention.

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SCREEN

TABLES

INTERFACE

Inquiry

Transformer
TSN
Transformer Status
Yard
Service Area

Detail

Transformers
Transformers Status
Manufacturer
Service Area
Yard
TSN
Volt Super Type
Volt Code
Transformer Kind
Transformer Feature
Transformer Type
Transformer Mount
Oil Type
Tap Code

History

Transformer
Transformer History
Status
Manufacturer
Service Area
Yard
Reason
Activity
User Security

Installation History

Transformer History
Transformer
Installation History
Status
Manufacturer
Service Area
Yard
User Security

Removal History

Transformer History
Transformer
Removal History
Status
Manufacturer
Service Area
Yard
User Security

Exhibit A

Transfer History	Transformer History
	Transformer
	Transfer History
	Status
	Manufacturer
	Service Area
	Yard
	User Security

Nameplate Maintenance History	Transformer History
	Transformer
	Attributes History
	Status
	Manufacturer
	Service Area
	Yard

Repair History	Transformer
	Transformer History
	Status
	Manufacturer
	Service Area
	Yard
	Repair Category
	Repair Vendor

Test Results History	Transformer
	Transformer History
	Inspection History
	Status
	Manufacturer
	Service Area
	Yard

Reclassification History	Transformer
	Transformer History
	Service Area
	Yard
	User Security
	Status
	Manufacturer

On Dock Quantities by Location & TSN	Yard
	TSN
	KVA
	Volt Supertype
	Volt Code
	Inventory by Yard TSN

Outstanding Orders	Yard
	TSN
	Order
	Order Line

TSN Not Reordered by Yard	Yard
	TSN Reorder by Yard

Install/Remove/Changeout Report	Service Area
	Transformer
	Installation History
	User Security
	Removal History
	Reason

Install	Service Area	DEIS AM/FM Interface
	Transformer	Laptop/DEIS/DIS Interface
	Inventory by Yard TSN	
	Transformer History	
	Installation History	
	Yard	
	Transformer Kind	
	Reason	
	Status	
	TSN	
	User Security	
	Yard Security	
	Inventory Yard Security	
	AM/FM Interface	
	Area Security	

Removal	Service Area	DEIS AM/FM Interface
	Transformer	Laptop/DEIS/DIS Interface
	Transformer History	
	Removal History	
	Status	
	TSN	
	Reason	
	Yard	
	User Security	
	Yard Security	
	Inventory Yard Security	
	Inventory by Yard TSN	
	AM/FM Interface	
	Area Security	
	CATS Interface	

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Changeout	Service Area Transformer Inventory by Yard TSN Transformer History Installation History Yard Kind Code Reason Status TSN User Security Yard Security Inventory Yard Security AM/FM Interface Area Security Removal History CATS Interface	DEIS AM/FM Interface Laptop/DEIS/DIS Interface
-----------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------

Laptop Errors	Laptop Interface Service Area Status User Security Reason Yard	
---------------	-------------------------------------------------------------------------------	--

DIS/DEIS Transformer Discrepancies	AM/FM DEIS Interface Service Area	AM/FM DEIS Interface
------------------------------------	--------------------------------------	----------------------

Order Review	Yard Order Order Line TSN KVA Kind User Security Inventory Yard Security Yard Security Route Shipper	WMIS DEIS Interface
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Order Entry	Yard User Security Yard Security Inventory Yard Security Order Order Line TSN KVA Kind Volt Supertype	
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Order Entry	Volt Code
	Shipper

On Dock Transformers	Transformer
	Yard
	TSN
	KVA
	Volt Supertype
	Volt Code
	Status
	Kind
	Crew
	User Security
	Yard Security
	Inventory Yard Security
	Crew Headquarter Yard
	Crew Yard
	Ship/ Receive

Ship /Receive	Yard
	Status
	Other Equipment TSN Table
	Shipper
	Transformer
	TSN
	Order
	Order Line
	Status
	Transformer History
	Transfer History
	Inventory by Yard TSN
	User Security
	Yard Security
	Inventory Yard Security
	Ship Receive

Nameplate Maintenance	Transformer	DEIS AM/FM Interface
	Service Area	
	Yard	
	Manufacturer	
	Transformer Status	
	TSN	
	Oil Type	
	Transformer History	
	AM/FM Interface	
	User Security	
	Yard Security	
	InventoryYard Security	
	Area Security	

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Retirement/Retirement Reversal	Capars Interface Transformer Transformer Status Manufacturer Yard TSN Inventory by Yard TSN Transformer History User Security Yard Security Inventory Yard Security
--------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Oil Test Results	Transformer Reason Transformer History Inspection History
------------------	--------------------------------------------------------------------

Crew	Crew
------	------

Crew Yard	Crew Yard Yard Crew
-----------	---------------------------

Add New Transformers	Manufacturer TSN Manufacturer Template Transformer Yard Capars Interface	DEIS/BAR CODE Interface DEIS CAPARS Interface
----------------------	--------------------------------------------------------------------------------------	--------------------------------------------------

Fill Orders	Yard Order Order Line TSN Transformer Ship/Receive Inventory by Yard TTSN Route	DEIS/BAR CODE Interface
-------------	------------------------------------------------------------------------------------------------------	-------------------------

Mass Retirement	CAPARS Interface Reason Transformer History Transformer Inventory by Yard TSN	DEIS CAPARS Interface
-----------------	-------------------------------------------------------------------------------------------	-----------------------

Mass Status Change	Reason Transformer History Transformer Inventory by Yard TSN
--------------------	-----------------------------------------------------------------------

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Add Found Device

Inventory by Yard TSN
Transformer
Manufacturer
Reason
Status
Activity Reason
Activity Reason Status
Oil Type
TSN
KVA
Kind
Volt Supertype
Volt Code
Yard

Repair

Transformer
Repair Vendor
Transformer History
Repair History
Repair Category
Inventory by Yard TSN
Manufacturer
Service Area
Yard
TSN

Company Number Change

Transformer
Status
Manufacturer
Service Area
Yard

Reclassification

Transformer
Status
CAPARS Interface
TSN
Inventory by Yard TSN

DEIS CAPARS Interface

TSN MFG Template

TSN Manufacturer Template
TSN
Manufacturer
Oil Type

Load Detail

Route
Load
Order
Order Line
TSN
Other Equipment TSN
Ship/Receive

[illegible]

Create/Update Loads	Route
	Load
	Driver
	Truck
	Trailer
	Shipper
	Status
	Transformer
	Yard
	Ship/Receive
	Transformer History
	Inventory by Yard TSN
	Other Equipemtn TSN
	TSN
	Order
	Order Line

Driver	Driver Truck
--------	-----------------

Other Equipment TSN	Other Equipment TSN
---------------------	---------------------

Route	Route
-------	-------

Shipper	Shipper
---------	---------

Trailer	Trailer
---------	---------

Truck	Truck
-------	-------

Manufacturer	Manufacturer TSN Manufacturer Template CAPARS Interface	DEIS CAPARS INTERFACE
--------------	---------------------------------------------------------------	-----------------------

Activity	Activity
----------	----------

Activity Reason	Activity Reason
	Activity Reason

Activity Reason Status	Activity Reason Status
	Activity
	Reason
	Status
	Activity Reason

Area Crew HQ	Area Crew HQ
	Service Area

Area Security	Area Security Service Area
---------------	-------------------------------

Inventory Yard Security	Inventory Yard Security Yard
KVA	KVA
Oil Type	Oil Type
Reason	Reason
Repair Category	Repair Category
Repair Vendor	Repair Vendor
Service Area	Service Area
System Paramaters	System Paramaters
Tap Code	Tap Code
Kind	Transformer Kind
Feature	Transformer Feature
Mount	Transformer Mount
Status	Transformer Status
Type	Transformer Type
TSN	TSN
TSN Reorder by Yard	TSN Reorder by Yard TSN Yard
User Security	User Security Yard Service Area Table
Volt Code	Volt Code Volt Supertype
Voltage Supertype	Voltage Supertype
Yard	Yard Route

Yard Crew Headquarter	Yard Crew Yard Crew
-----------------------	---------------------------

Yard Security	Yard Security Yard
---------------	-----------------------

009250 9E903660

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EQUIPMENT INFORMATION SYSTEM AND METHOD

WHAT IS CLAIMED IS:

1. An equipment information system comprising:
an equipment database;
a database manager operable to access and interrogate
5 the equipment database;
a table maintenance module operable to perform system
maintenance on the equipment database through an
interface;
an inquiry module operable to query the equipment
10 database through an interface;
an inventory module operable to store and change data
in the equipment database through an interface, and to
allocate an order;
a transportation module operable to record the
15 transport of equipment from central inventory location to
a service center using the equipment database and through
an interface; and
an installations/removals module operable to record
the installation and removal of equipment using the
20 equipment database through an interface.

2. The equipment information system of Claim 1,
further comprising:
a stored procedure operable to access the data in the
25 equipment database.

3. The equipment information system of Claim 1,
further comprising:
a stored procedure operable to change the data in the
30 equipment database.

- 42 -

EQUIPMENT INFORMATION SYSTEM AND METHOD

4. The equipment information system of Claim 2,
wherein the stored procedure is executed periodically.

5. The equipment information system of Claim 2,
wherein the stored procedure is executed on-demand through
a graphical user interface.

6. The equipment information system of Claim 2,
wherein the execution of the stored procedure is initiated
through an external interface.

7. The equipment information system of Claim 2,
wherein the execution of the stored procedure is initiated
through a second stored procedure.

8. The equipment information system of Claim 1,
further comprising:
an external interface operable to exchange
information with the equipment database.

9. The equipment information system of Claim 1,
further comprising:
a stored procedure operable to automatically order
equipment and to store the order in the equipment
database.

10. The equipment information system of Claim 1,
wherein the equipment database includes data organized
into tables.

- 43 -

EQUIPMENT INFORMATION SYSTEM AND METHOD

11. The equipment information system of Claim 1,
wherein the database manager and the equipment database
are provided at a server and the modules are provided as
an executable at a client.

5

12. The equipment information system of Claim 1,
further comprising:

an allocation stored procedure operable to
automatically allocate equipment through a stock number
based on the receipt of an order.

10

003350 2650350

- 44 -

EQUIPMENT INFORMATION SYSTEM AND METHOD

13. A method for managing equipment information comprising:

storing attributes of a piece of equipment in an equipment information database that indicates the type of the equipment when the equipment is received at a central inventory location;

adding an indication in the equipment information database that the equipment is available inventory;

receiving an order for equipment needed at a service center that is of the same type as the equipment;

allocating inventory to the order based on available inventory in the equipment information database;

shipping the equipment for the order to the service center;

installing the equipment;

updating the equipment information database to indicate that the equipment has been installed;

removing the equipment;

updating the equipment information database that the equipment has been removed; and

shipping the equipment to the central inventory location.

14. The method for managing equipment information of Claim 13, wherein the equipment is a transformer.

15. The method for managing equipment information of Claim 13, wherein the attributes of the equipment includes serial number and manufacturer.

16. The method for managing equipment information of Claim 13, wherein the attributes of the equipment includes

- 45 -

EQUIPMENT INFORMATION SYSTEM AND METHOD

serial number and manufacturer.

17. The method for managing equipment information of
Claim 13, wherein the storing attributes of a piece of
equipment includes using a bar code scanner.

18. The method for managing equipment information of
Claim 13, wherein the order was received from an external
system.

19. The method for managing equipment information of
Claim 13, further comprising:
deallocating the order after allocating the order.

20. The method for managing equipment information of
Claim 13, wherein the order was received from an
automatically generated order.

21. The method for managing equipment information of
Claim 13, further comprising:
filling the order after allocating the order.

- 46 -

EQUIPMENT INFORMATION SYSTEM AND METHOD

22. A method for allocating an order in an equipment information system comprising:

receiving an order to supply equipment from an equipment inventory at a central inventory location to a service center;

5

determining if the order is eligible for allocation;

determining if equipment is available in the equipment inventory to fill allocate the order;

allocating the order; and

10

filling the order.

005050 " 9E50850

- 47 -

EQUIPMENT INFORMATION SYSTEM AND METHOD

ABSTRACT OF THE DISCLOSURE

An exemplary equipment information system and method are provided that allow equipment inventory to be efficiently and effectively tracked, monitored, and evaluated. A method for managing equipment information is provided that includes storing attributes of a piece of equipment in an equipment information database when the equipment is received at a central inventory location, adding an indication in the equipment information database that the equipment is available inventory, receiving an order for equipment needed at a service center that is of the same type as the equipment, and allocating inventory to the order based on available inventory in the equipment information database. The method may further provide shipping the equipment for the order to the service center, installing the equipment, updating the equipment information database to indicate that the equipment has been installed, removing the equipment, updating the equipment information database that the equipment has been removed, and shipping the equipment to the central inventory location.

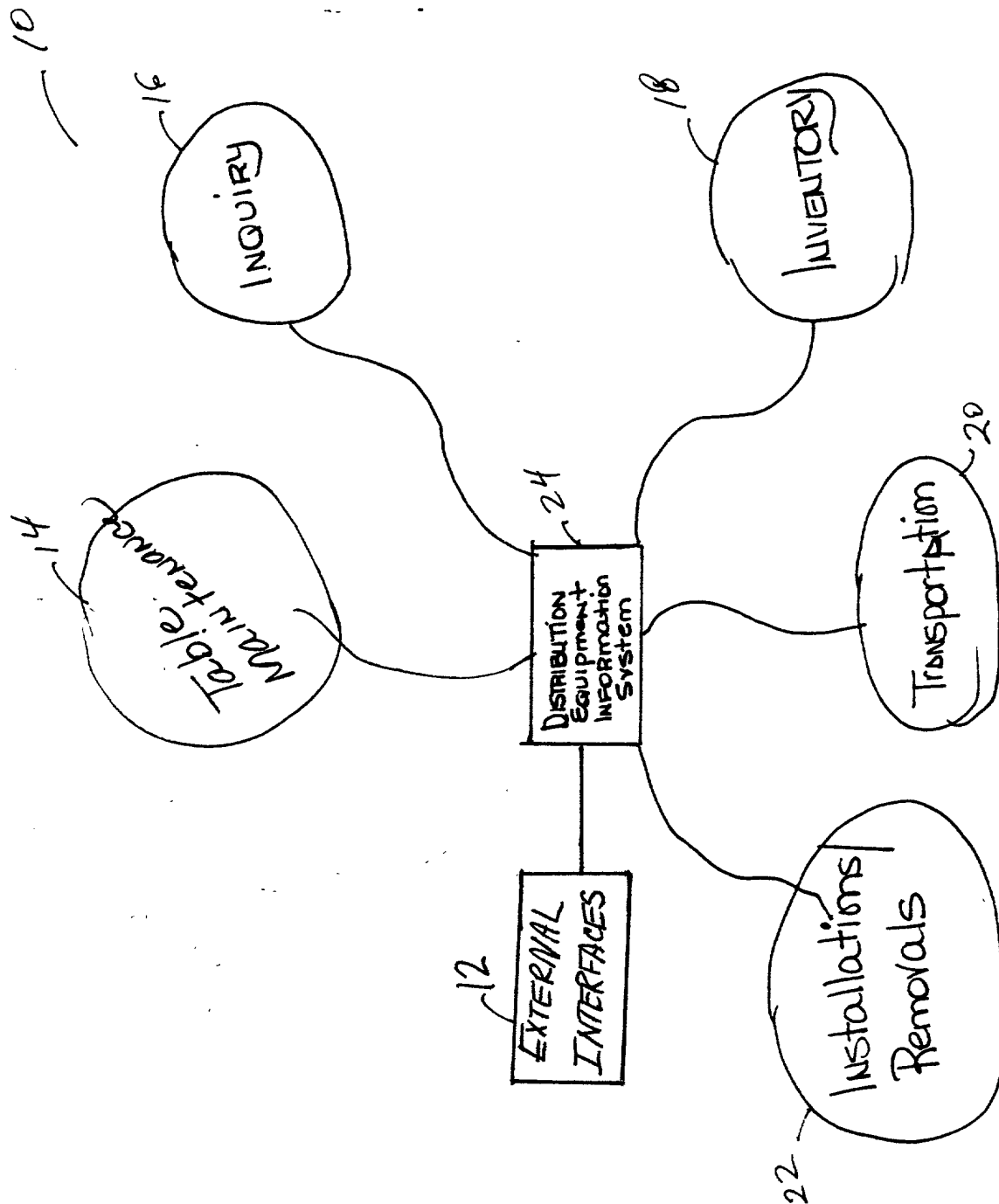


FIG 1
BASI-IP2013

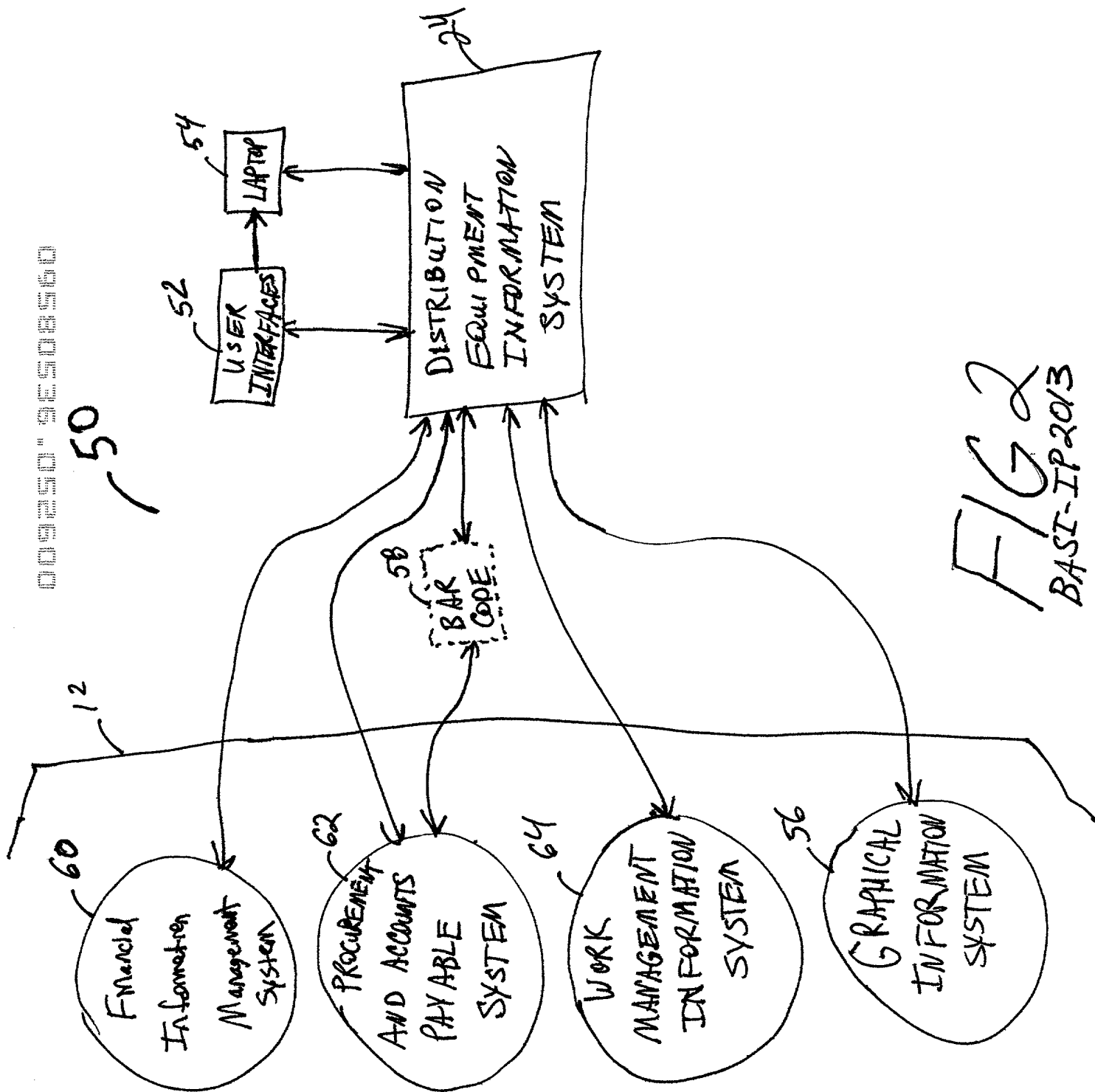


FIG 2
BASI-IP2013

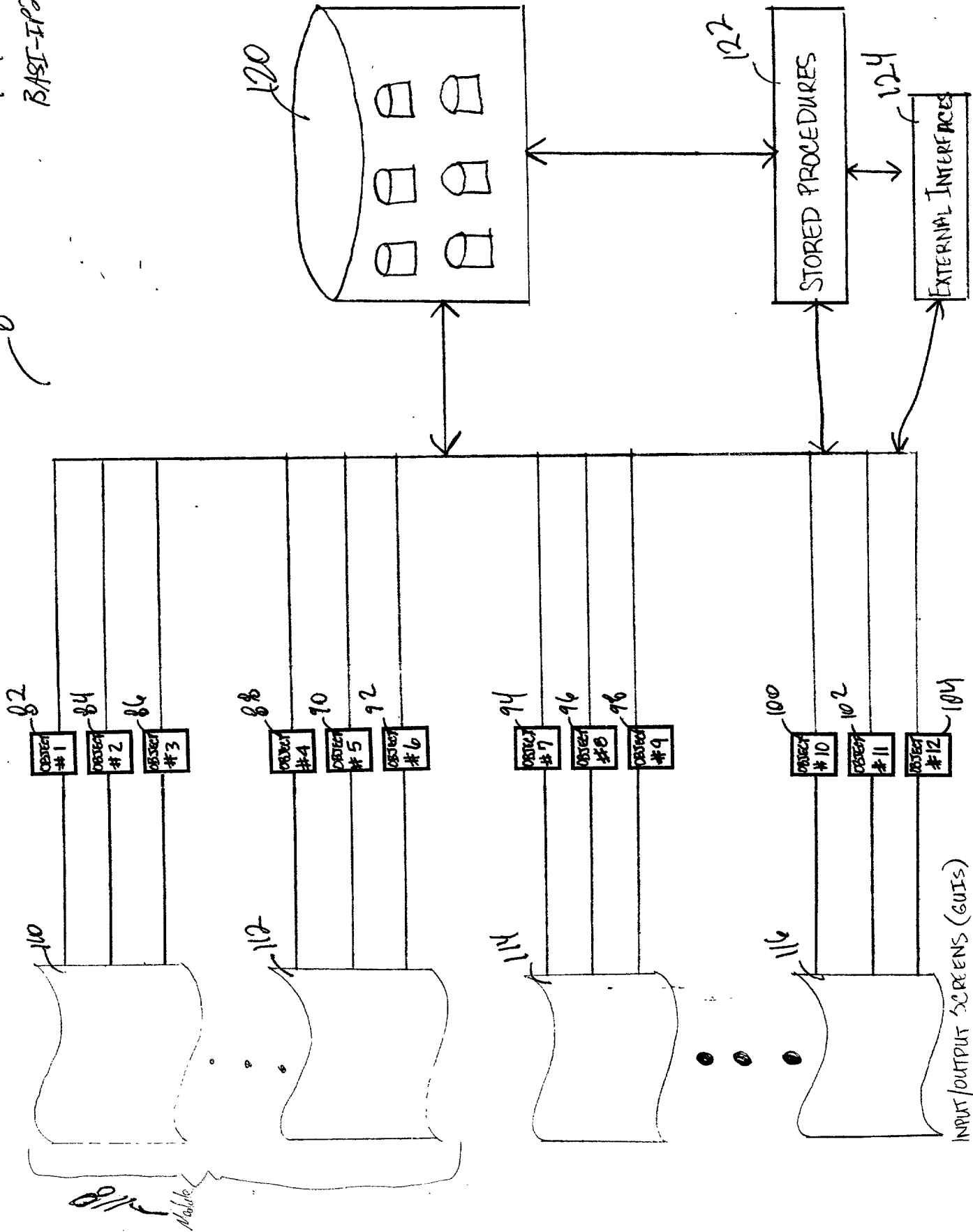
CLIENT EXECUTABLES

005250" 9E508560

F7G3

BASI-IP2013

80



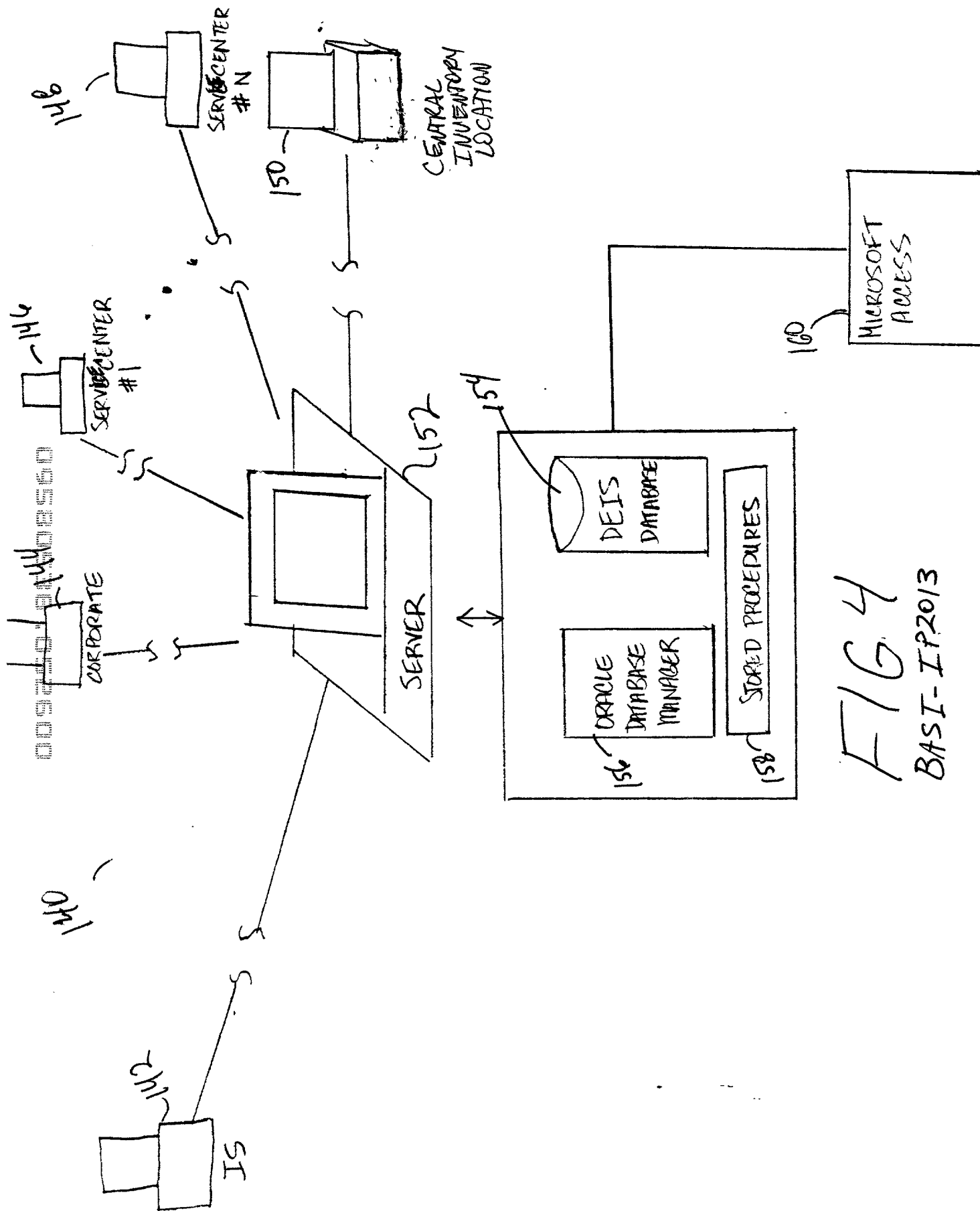


FIG 4
BASI-IP2013

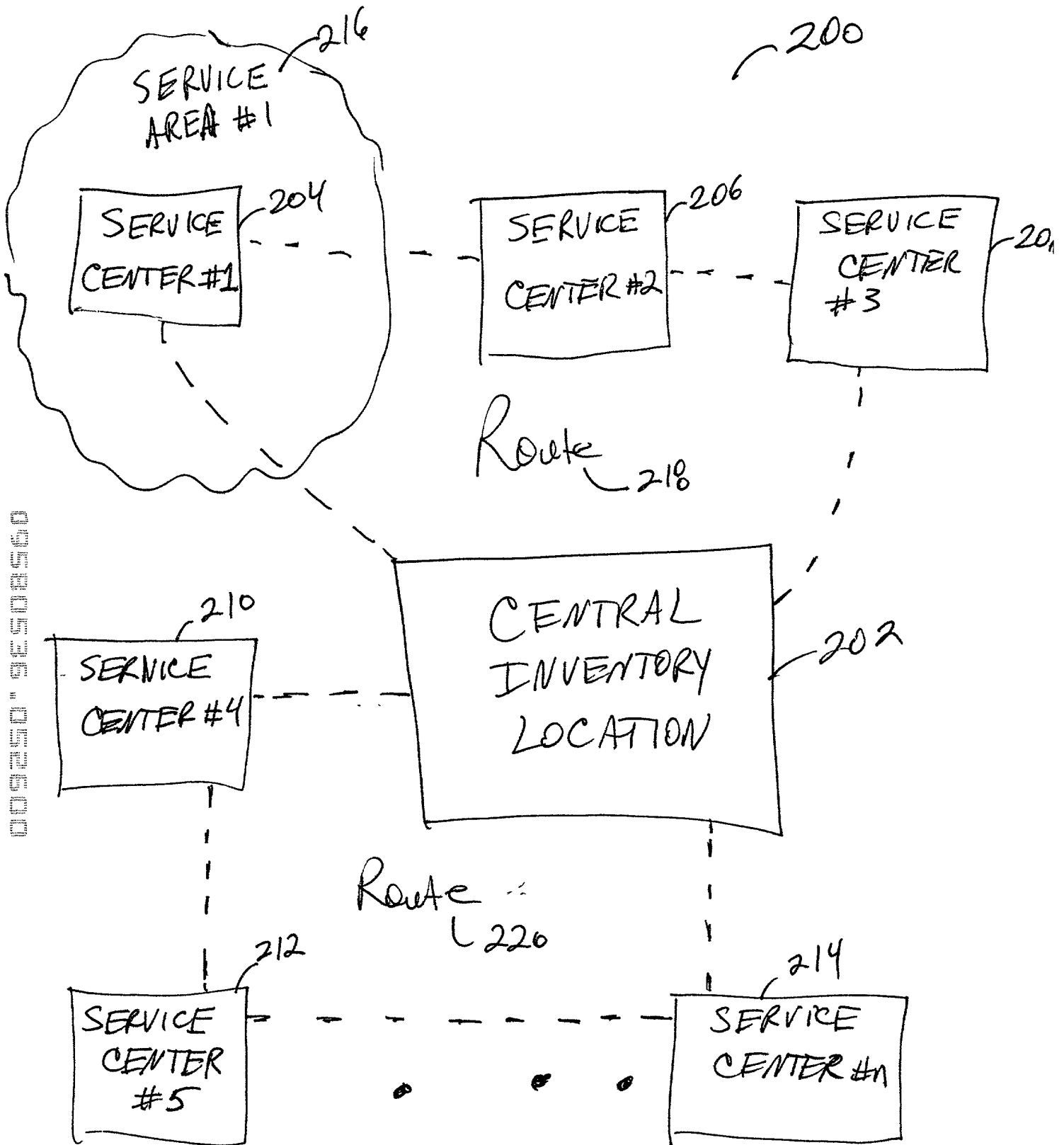


FIG 5
BASI-IP2013

Service area
Service center

009250" 9E508960

09580536 052600

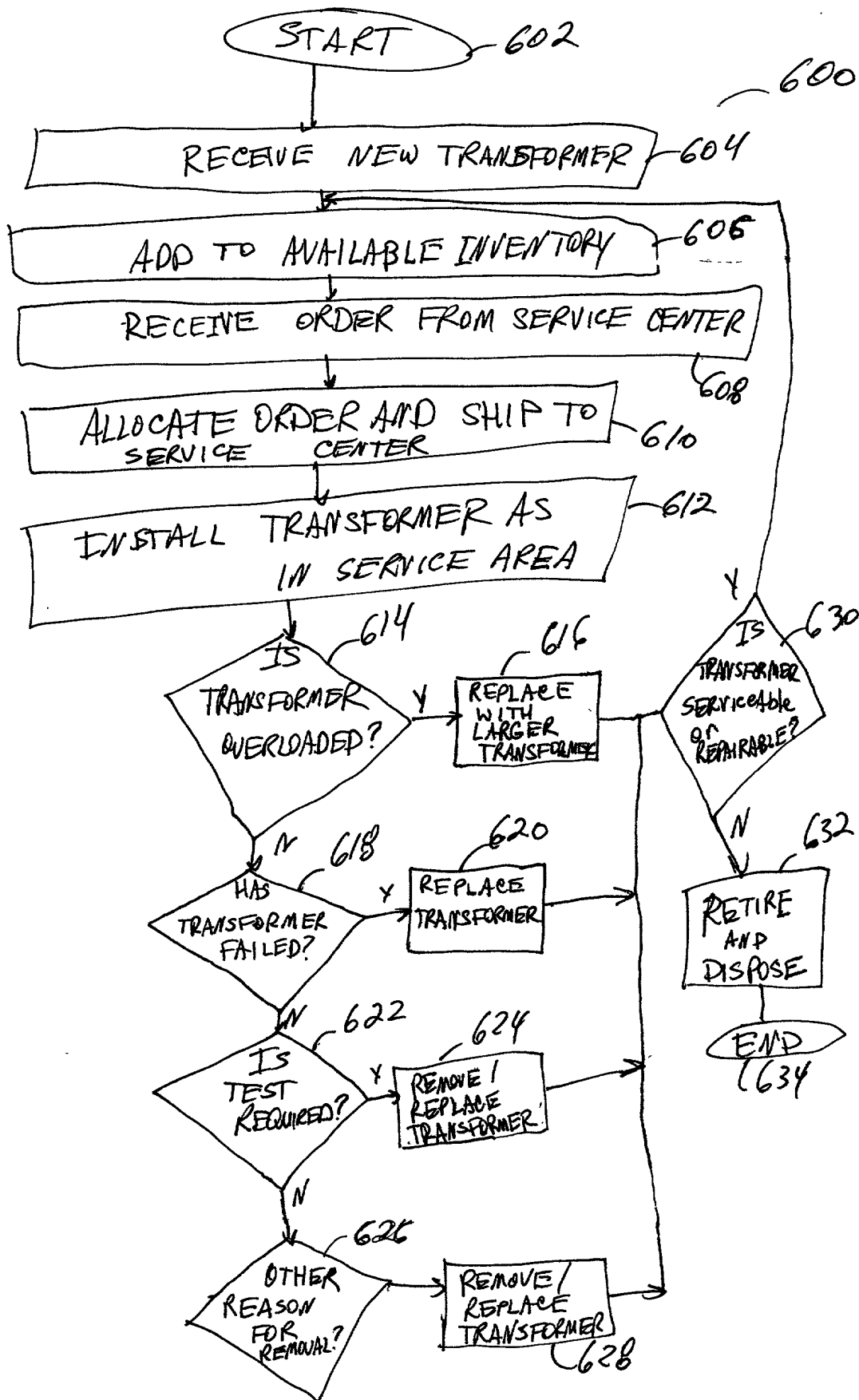


FIG 6 BASI-IP2013

00580536 052600

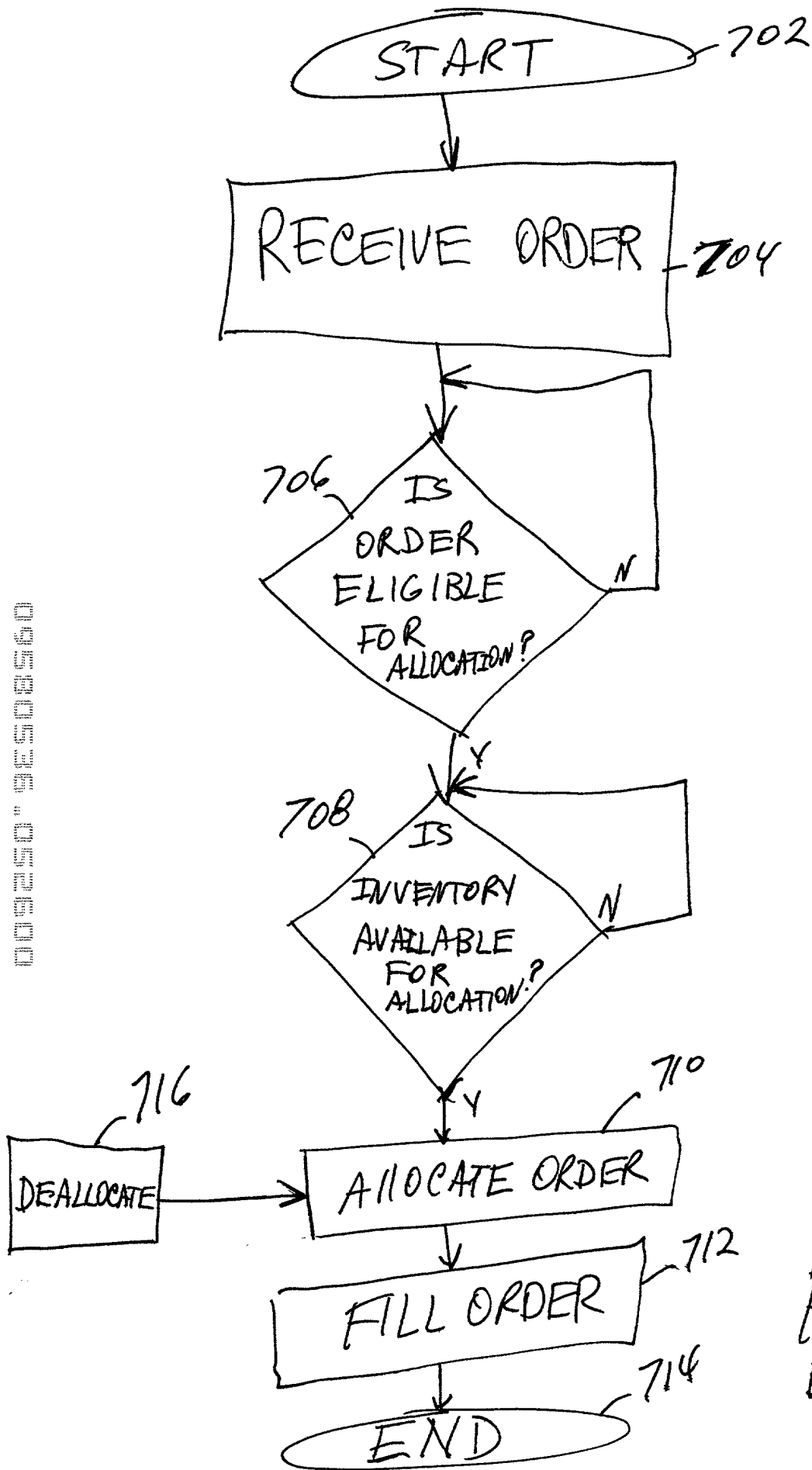


FIG 7
BASI-IP2013

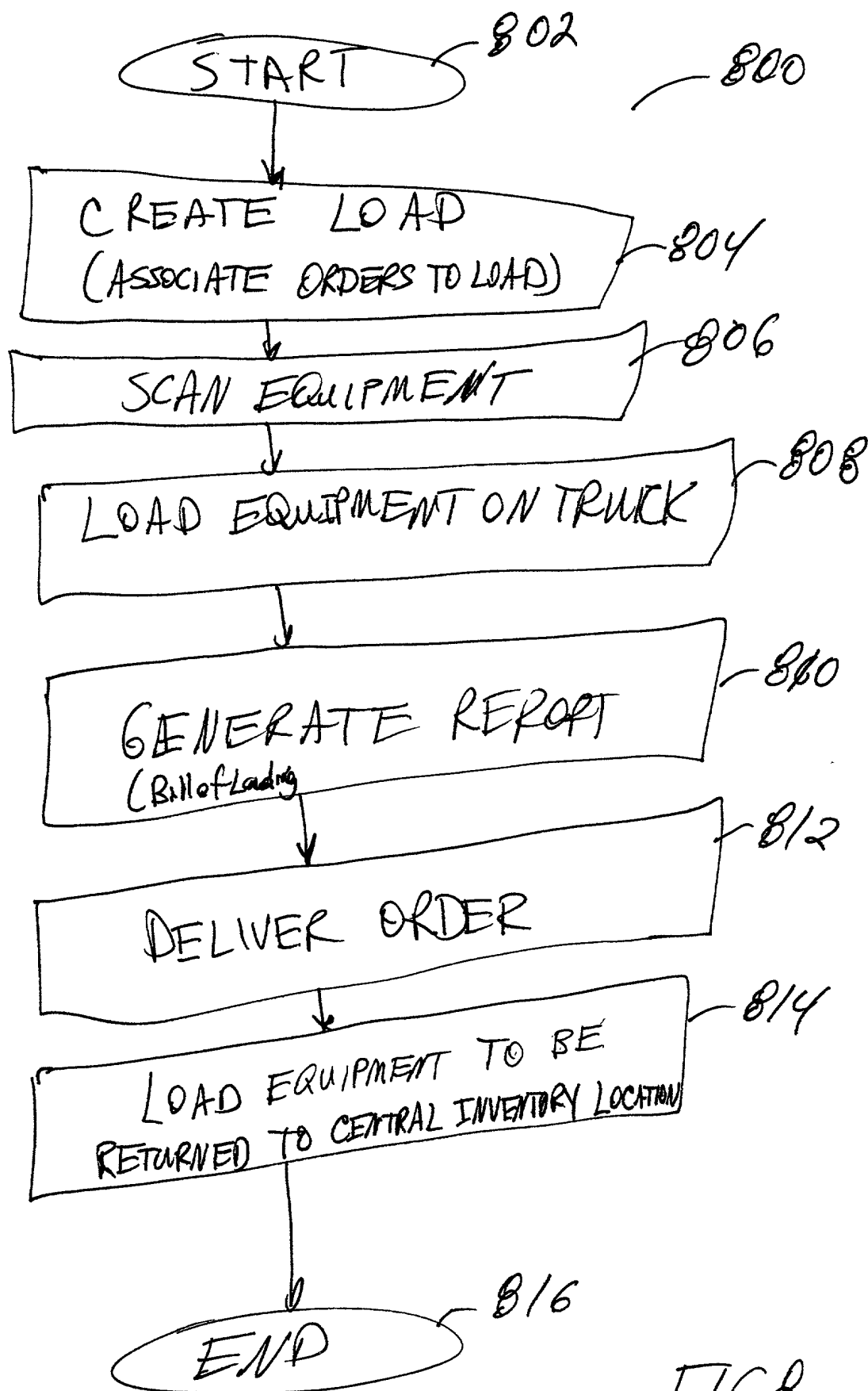
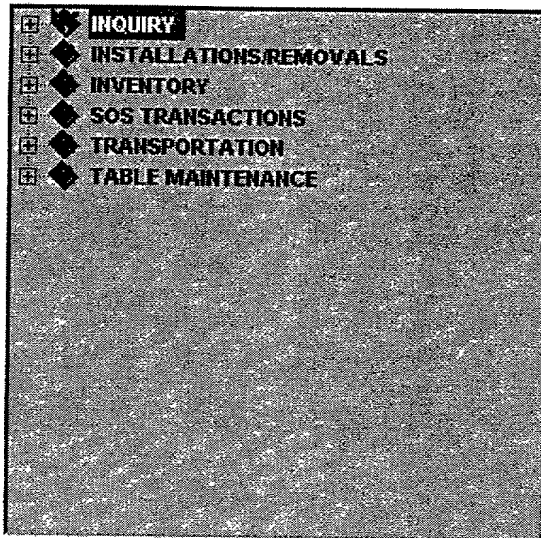


FIG 8
B1SI-IP2013

DEIS SCREENS

TREE VIEW MENU



INQUIRY SECTION

The screenshot shows a window titled "Inquiry" with a menu bar containing "At This FLN", "History", "Detail", "Sort", and "Cancel". Below the menu bar is a search area with input fields for "Co #", "Serial #", and "FLN", and a "Search" button. The main area displays a table of records. The table has columns for "Co#", "Serial #", "FLN", "Tsn", "Service Area / Yard", and "Status". The records are as follows:

Co#	Serial #	FLN	Tsn	Service Area / Yard	Status
9380201	93A092208	22843242503	310816 37 CV 7.2 240/480/2B	Grand Prairie	Active - Metered Load
9380204	1138250493	29235381050	310793 15 CV 7.2 120/240 1B	Temple	Active - Metered Load
9380205	1138210493	29425037303	310793 15 CV 7.2 120/240 1B	Temple	Active - Metered Load
9380206	2766945192	29235305673	310793 15 CV 7.2 120/240 1B	Temple	Active - Metered Load

At the bottom of the window, there is a status bar showing "Current Record No: 1" and "Total Records: 74".

Fig. 9

002250" 9E508560

Detail

History Cancel

Detail

Company No: 9380295 Ser No: 4660061192 FLN: 28193229788
Status: Active - Metered Load Mfg: Kuhlman GLN: 37136372775547
Disposition: Srv Ar/Yard: Round Rock Link Fr Co #:
Purchase Date: 03/17/1993 Issued W/R: Link To Co #:
Address: LOST SPRING

Nameplate Data

TSN: 300796 25 CV 14.4-120/240 1B
KVA: 25 Pri Volt: 24940 GRD.Y/M 4400 Sec Volt: 120/240
Kind: 1 ph o/h Weight: 885 Taps: No Taps
Type: Conventional Impedance: 1.9 Mount: POLE
Polarity: Special Feature: None # Pri Bush: 1
Oil (gal): 0 Excl Curr: 0 # Sec Bush: 3
Oil Type: Untested Core Loss: 0 Load Loss: 0

K-21.00.7.66.06

History

Detail History Detail Cancel

History

Company No: 9380295 Ser No: 4660061192 FLN: 28193229788
Status: Active - Metered Load Mfg: Kuhlman GLN: 37136372775547
Disposition: Srv Ar/Yard: Round Rock Link Fr Co #:
Purchase Date: 03/17/1993 Issued W/R: Link To Co #:
Address: LOST SPRING

Date	Activity	Stat Before Chng	User	Reason
12/07/1993	Install	Available	CONV	System Startup

Comments

K-21.00.7.67.04

Fig. 10

BASI.IP2013

009250" 9E508560

Installation History

Cancel

Company No: 9380295 Ser No: 4660061192 FLN: 28193229788
Status: Active - Metered Load Mfg: Kuhlman GLN: 37136372775547
Disposition: Srv Ar/Yard: Round Rock Link Fr Co #:
Purchase Date: 03/17/1993 Issued W/R: Link To Co #:
Address: LOST SPRING

Date	W/R	FLN	Phase	Serv Area	User
12/07/1993	00001993	28193229788		Round Rock	CONV

1 2

5-21-99 7:57:44

Removal History

Cancel

Company No: 9802100 Ser No: 98A421423 FLN: 27535457639
Status: Active - Metered Load Mfg: ABB GLN:
Disposition: Srv Ar/Yard: Killeen Link Fr Co #:
Purchase Date: 10/22/1998 Issued W/R: Link To Co #:
Address: 213 BLANKET dr cpc

Date	W/R	FLN	Yard	User
------	-----	-----	------	------

1 2

5-21-99 8:00:33

Fig. 11

009250" 9E508560

Transfer History

Cancel

Company No: 9802101 Ser No: 98A421454 FLN: 36896592977204
Status: Active - Metered Load Mfg: ABB GLN:
Disposition: Srv Ar/Yard: Killeen Link Fr Co #:
Purchase Date: 10/22/1998 Issued W/R: Link To Co #:
Address: f.m. 3470 concrete plant

Transfer Date	From Location	Shipped by User	To Location	Status
11/03/1998	S O S	DAVID DAVIS	KILLEEN	Complete

15.01.99 8:00:40

Nameplate Maintenance History

Cancel

Company No: 9802111 Ser No: 98A421299 FLN: 22812272283
Status: Active - Metered Load Mfg: ABB GLN:
Disposition: Srv Ar/Yard: Waxahachie Link Fr Co #:
Purchase Date: 10/22/1998 Issued W/R: Link To Co #:
Address: hwy 287 bypass and rudd rd ennis

Date	Old Ser No	New Ser No	Old Ten	New Ten	Old Serv Area	New S
------	------------	------------	---------	---------	---------------	-------

15.01.99 8:01:19

Fig. 12

Repair History

Cancel

Repair History

Company No: 9802111

Ser No: 98A421299

FLN: 22812272283

Status: Active - Metered Load

Mfg: ABB

GLN:

Disposition:

Srv Ar/Yard: Waxahachie

Link Fr Co #:

Purchase Date: 10/22/1998

Issued W/R:

Link To Co #:

Address: hwy 287 bypass and rudd rd ennis

Invoice Date	Invoice No	Repair Vendor	Repair Cost	Repair Category	Us

Test Results History			
<div>Cancel</div>			
<h3>Test Results History</h3>			
Company No:	9700001	Ser No:	97465103
FLN:	6212235396	Status:	Active - Metered Load
GLN:	38895783593145	Mfg:	Central Moloney
Disposition:		Srv Ar/Yard:	Arlington
Link Fr Co #:		Purchase Date:	10/06/1997
Link To Co #:		Issued W/R:	
Address: 763 TAFT DR ARL			
Sample Date	PPM	Lab Id	Oil Spill Id
Empty table body for data entry			

009250" 9E508560

Reclassification History

Cancel

Company No: 9700001 Ser No: 87465103 FLN: 8212235396
Status: Active - Metered Load Mfg: Central Moloney GLN: 38895783593145
Disposition: Srv Ar/Yard: Arlington Link Fr Co #:
Purchase Date: 10/06/1997 Issued W/R: Link To Co #:
Address: 763 TAFT DR ARL

Date	Activity	Yard	User	PTF	C
------	----------	------	------	-----	---

1/21/00 9:10:11

On-Dock Quantities by Location and TSN

Cancel

Report Criteria

Yard:
TSN:
Size:
Primary Voltage:
Secondary Voltage:

Current Row No: Total Records:

1/21/00 9:10:11

Fig. 14

BASI.IP2013

On-Dock Quantities by Location and TSN

Cancel

On-Dock Quantities by Location and TSN

Report Criteria

Yard	TSN	Description	Available	Allocated	Issued	Reserved	Damaged
ALEDO	300796	25 CV 14.4-120/240 1B	2				
ALEDO	300810	50 CV 14.4-120/240 1B	1				
ALEDO	300932	25 DF 12470GY/7200-240/120Y-II	1				
ALEDO	300946	50 DF 7.2-240/120 - II	1				
ALEDO	300961	75 DF 7.2-240/120 - II	1				
ALEDO	310398	37 CV 7.2-120/240 2B	1				
ALEDO	310792	10 CV 7.2-120/240 1B	2				
ALEDO	310793	15 CV 7.2-120/240 1B	2				
ALEDO	310794	25 CV 7.2-120/240 1B	2				
ALEDO	310795	37 CV 7.2-120/240 1B	1				
ALEDO	310798	50 CV 7.2-120/240 1B	1				
ALEDO	310803	10 CV 14.4-120/240 1B	2				
ALEDO	310804	15 CV 14.4-120/240 1B	1				

Current Row No: 1 Total Records: 20

05/21/99 0:11:24

Outstanding Orders

Cancel

Outstanding Orders

Report Criteria

Yard: Location: ARLINGTON

Orders For:

☒ All Transformers

☐ Non B and B / 3 Phase Only

Sort By:

☒ TSN ☐ Yard

Dates: ☒ All Dates

May 1999

S	M	T	W	T	F	S
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

05/21/99 0:12:19

Fig. 15

00580536 052600

Outstanding Orders

Cancel

Report Criteria

Coordinator's Listing for 5/21/99

TSN: 300762 25 CSP 13200Y/7620-120/240V

Create Date	Need Date	Order No	Destination	WR #	Need	Alloc	Trans	Com
09/15/1998	04/20/1999	10990	ARLINGTON	1107434	1			
Total for TSN: 300762						1		

TSN: 300782 100 CV 7200/12470V-120/240 2B

Create Date	Need Date	Order No	Destination	WR #	Need	Alloc	Trans	Com
04/29/1999	06/24/1999	28082	ARLINGTON	1142922	1			
Total for TSN: 300782						1		

TSN: 300796 25 CV 14.4-120/240 1B

Create Date	Need Date	Order No	Destination	WR #	Need	Alloc	Trans	Com
05/18/1999	05/26/1999	29633	ARLINGTON	1149560	1			

5/21/99 9:26:04

TSNs Not Auto Re-Ordered by Yard

Cancel

Location FORT WORTH SOUTH

FORT WORTH SOUTH

Tsn	Description
300915	150 PAD 13.2-480Y/277 LF radial feed
300936	300 PAD 13.2D-208Y/120V LOOP
300938	300 PAD 13.2D-480Y/277 LF radial feed
300941	300 PAD 24.9CY-480Y/277 LF radial feed
300952	500 PAD 13.2D-208Y/120V LF radial feed
300953	500 PAD 13.2-480Y/277 3PH
301088	1000 VM 13200 DELTA-2400/4160V
301089	1000 VM 13200 DELTA-480Y/277V
301093	1500 VM 13200 DELTA-480Y/277V
311587	225 PAD AA-1,12.5 D-208Y/120V

5/21/99 9:29:23

Fig.1b

Install/Remove/Changeout Report

Cancel

Report Search

Location
Service Area: Arlington

From To

May 1999

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

May 1999

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

5/21/99 12:33:05

Install/Remove/Changeout Report

Cancel

Report Search

REMOVAL

FLN : 8021431173

Location/Address : Service Area : Arlr

Comments : this is an idle trans that was on the pole we were working. Jation / 2312

Reason for Activity : Idle Add to Existing Bank : ☐

Wiring Configuration : Connected to Secondary : ☐

INSTALLATIONS			REMOVAL	
Company # :	Serial # : 99J789047	Phase :	Company # : 9103760	Size :
Size :			Size : 15	
Company # :	Serial # : 99J789047	Phase :	Company # :	Size :
Size :			Size :	
Company # :	Serial # : 99J789047	Phase :	Company # :	Size :
Size :			Size :	

5/21/99 12:33:05

Fig. 17

BASI.IP2013

INSTALLATIONS/REMOVALS SECTION

Install

Process Cancel

Service Area: Arlington WR: 1009424 FLN/Work Point: 436833349293.001

Location: Comments:

Company No.	SM	Phase

☐ Connected to Secondary
☐ Add to Existing Bank
 Wiring Config: Reason: New Construction Status: Active - Metered Load

Search Criteria: Yard: Size: Mind: Search: Show Issued Units Only: Cat: SM: TSM: Descript:

Removal

Process Cancel

Work Request Details: Service Area: Arlington WR: Comments:

Removal: Locate Active Transformers:

Search by:

Area: AND: WR: FLN/Work Point: OR: FLN: OR: Co #: OR: Serial #:

Fig. 18

BASI.IP2013

009250" 9E508560

Removal

Process Cancel

Work Request Details

Service Area: W/R:

Comments:

Removal Locate Active Transformers

Co #	Status	FLM
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

Remove from existing bank: ☐

Wiring Configuration:

Return to Yard:

Reason:

Co #	SM	FLM
9600137	98A501850	8108133908

Changeout

Process Cancel

Work Request Details

Service Area: W/R:

Location:

Comments:

Removal Locate Active Transformers Install

Search by:

Area: AND

W/R: PinWork Point: OR

FLM: OR

Co #: OR

Serial #:

Fig. 19

BASI.IP2013

009250" 96508560

Changeout

Process Cancel

Work Request Details

Service Area ALL W/R

Location

Comments

Removal Locate Active Transformers Install

Remove Units

Co #	Status	FLN

Return to Yard

Active Units

Co #	SN	FLN	
9837028	98A343035	39003353553631	Activ
9835682	98A320061	7855734714	Activ
9836771	98A317628	8242234911	Activ
9839764	98A392262	8108528265	Activ
9839616	98A370187	38890883521604	Activ
9836825	98A317846	8025533289	Activ

15-01-09 10:43:20

Changeout

Process Cancel

Work Request Details

Service Area ALL W/R

Location 2200 se green oaks

Comments

Removal Locate Active Transformers Install

Install Units

Company No	S/N	Phase

Wiring Config

Reason Replace Damaged Unit

Status Active - Metered Load

Search Criteria

Yard Size Kind Search

Show Issued Units Only

Co#	SN	TSH	Descript

15-01-09 10:43:20

Fig. 20

Laptop Errors

Resume Delete Cancel

Service Area: Decatur Status: ALL

Summary Detail

Transaction No	Date Entered	User Id	Type	Status	Error Message OR Address
8	04/09/1999	FDSB	Install	Complete	cr3420
273	06/24/1998	FDSB	Install	Complete	Poco Plant Capacitor Bank
243	06/27/1998	IHO	Install	Complete	612 n wickham
824	12/09/1998	FDSB	Changeout	Complete	15401 fm 920 poolville
409	11/06/1998	FDSB	Install	Complete	1102 salt creek road
408	11/08/1998	FDSB	Install	Complete	392 private road 3762
808	12/08/1998	FDSB	Removal	Complete	
809	12/08/1998	FDSB	Changeout	Complete	city of springtown
810	12/08/1998	FDSB	Install	Complete	hwy 380 runaway bay
59	08/12/1998	FDSB	Changeout	Complete	502 Sawell Drive
60	08/12/1998	FDSB	Install	Complete	610 Co.Rd. 2730
61	08/12/1998	FDSB	Install	Complete	Siddell School water well
954	01/04/1999	FDSB	Changeout	Complete	LakeBRIDGEPORT Aston drive
202	08/20/1998	IHO	Changeout	Complete	
203	08/20/1998	IHO	Changeout	Complete	
205	08/20/1998	FDSB	Removal	Complete	

Fig. 21.09.10.43.50

DIS / DEIS Transformer Discrepancies

Save Delete Cancel

Service Area: Arlington

Company #	FLN	GLN	Error Message
7305744	8295927325	39000923513088	Transformer active in DIS, inactive in DEIS
9407676	8368334929	39053513588951	Transformer active in DIS, inactive in DEIS
8717022	7447526720	38149853504916	Transformer active in DIS, inactive in DEIS
7404425	8127028674	38327653526032	Transformer active in DIS, inactive in DEIS
8404523	7955232250	38646173561207	Transformer active in DIS, inactive in DEIS
8502934	8100531105	38794883550187	Transformer active in DIS, inactive in DEIS
9514039	8181135231	38865023591467	Transformer active in DIS, not found in DEIS
8100051	8029430760	38724433546568	Transformer active in DIS, inactive in DEIS
9513952	8229634979	38914303589080	Transformer active in DIS, not found in DEIS
9384545	8061429622	38759383535334	Transformer active in DIS, not found in DEIS
8806759	7992729052	38691873529481	Transformer active in DIS, inactive in DEIS
9514038	8227934560	38913733584908	Transformer active in DIS, not found in DEIS
9513974	8325534113	39012763580715	Transformer active in DIS, not found in DEIS

Current Record No: 7 Total Records: 95

Fig. 21.09.11.12

Fig. 21

INVENTORY SECTION

Order Review

Delete DeAllocate Allocate Order Entry Filter by TSN Cancel

Order Review

Orders Criteria

Yard
From To

Dates
Created To
Modified To

Order Type
Auto ☐
WMIS ☐
Manual ☐

TSN
Ten
Size
Kind

Order Status
Outstanding ☐
Ready ☐
In-Transit ☐
Complete ☐
Allocated ☐

Wr No
Wr No

15/01/99 9:13:02

Order Review

Delete DeAllocate Allocate Order Entry Filter by TSN Cancel

Order Review

Orders Criteria

Order	Ord #	W/R	Created Date	Needed By Date	Modified Date	Modified By	TSN	Order Qty	Order Type
10390	1107434		09-15-1998	04-20-1999	04-20-1999	ESTP	300762	1	WMIS
14874	1109799		10-30-1998	10-30-1998		esqz	407339	1	Manual
16635	1027241		11-25-1998	11-27-1998		erqg	319308	1	WMIS
19755	1124117		01-18-1999	01-18-1999		l2gg	300822	1	WMIS
19855	1081653		04-10-1999	04-20-1999		04-20-1999 ESTD	310840	1	WMIS

Order Details

TSN	Description	Ord	Outst	Ready	Trans	Comp	Alloc
300762	25 CSP 13200Y/7620-120/240V DETERIORATED POLE	1	1				

Order Items

Total Records: 53

15/01/99 9:13:10

Fig. 22

Order Entry

Save Order Review New Order Cancel

Order Entry

From To WRR

Quantity Ship Via Jobsite Delivery ☐

Comments

Allow Substitution ☒ TSN

Order #s Generated

Need Date

Search

Kva	Kind	Primary Voltage	Secondary Voltage
<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>

Tsn	Tsn Desc
300755	10 CSP 7.2 120/240
300756	10 CSP 7620 120/240
300757	100 CSP 7620 120/240
300758	15 CSP 7.2 120/240
300759	15 CSP 7620 120/240

S	M	T	W	T	F	S
3	4	5	6	7		
10	11	12	13	14		
17	18	19	20			
24	25	26	27	28		
31						

May 1999

S M T W T F S

3 4 5 6 7

10 11 12 13 14

17 18 19 20

24 25 26 27 28

31

15.21.99.9.14.21

On Dock Transformers

Sort Detail History Ready to Ship On Dock Issue Return to Yard Cancel

On Dock Transformers

Transformers Search Criteria

Transformer On-Dock Search Criteria

Company No

OR

Yard

TSN

Size

Primary Secondary

Status Disposition

Kind

Current Record: Total Selected Records: Total Records:

15.21.99.9.15.12

Fig. 23

BASI.IP2013

009250"92508560

On Dock Transformers

Sort | Detail | History | Ready to Ship | On Dock | Issue | Return to Yard | Cancel

On Dock Transformers

Transformers | Search Criteria

Co #	SN	TSN	Yard	Status	Disposition	De
5300922	1358666	300755	ARLINGTON	Damaged		

Current Record: 1 | Total Selected Records: 0 | Total Records: 1

15-21-00 0:15:00

Ship / Receive

Ship | Receive | Cancel Transfer | Sort | Ship Other Equip | Loading Doc | Bill of Lading

Select All | Deselect All | Save | Cancel

Ship / Receive

Ship/Receive | Search

From: SOS

To: IRVING

Status:

Disposition:

15-21-00 0:15:00

Fig. 24

BASI.IP2013

009250" 96508560

Ship / Receive

Ship | Receive | Cancel Transf | Sort | Ship Other Equip | Loading Doc | Bill Of Lading

Select All | Deselect All | Save | Cancel

Ship / Receive

Ship/Receive | Search

Co #	Serial #	TSN	WR	Ord / Line	Qty	Status	From	To
9930391	99J829203	425636	1113072	24333/1	1	Available	S O S	IRVING
			150	12470 Delta-480Y/277v		DEADFRON		
9930393	99J829328	425636	1113072	24334/1	1	Available	S O S	IRVING
			150	12470 Delta-480Y/277v		DEADFRON		
9827533	98J681348	317067	1004363	866/1	1	Available	S O S	IRVING
			750 PM 24.9GY/14.4-480Y/277v			LF radial		

5/21/99 9:16:49

Nameplate Maintenance

Save | Cancel

Nameplate Maintenance

Company # | Serv Area/Yard | Serial No | Manufacturer

9835000 | Odessa | 98A232089 | ABB

Status | FLN | Link From Co # | Disposition

Active - Metered | 2062641306 | |

Location | 1219 LINDBERG ST | Order No |

Nameplate Data

TSN	Description	Weight	Oil Type	Oil(gal)	Impedance	Exciting Current	Core Loss	Load Loss
B10398	37 CV 7.2 120/240 2B	1175	LT 1 PPM	45	1.80	.00	0	0

Comments

5/21/99 9:19:00

Fig. 25

BASI.IP2013

Retirement/Retirement Reversal

Save Cancel

Retirement/Retirement Reversal

Transformer Details

Company #	5400325	Serial #	216117
Status	Damaged	Manufacturer	General Electric
Yard	ARLINGTON	Purchase Date	06/17/1954
TSN	300758	15 CSP 7.2 120/240	

Update Details

Reason		Status	
Comments			

15-21-99 9-20-22

Oil Test Results

Save Cancel

Oil Test Results

Reason

Test Results Data

Company No	9930091
Lab Id	
Oil Sample Date	00/00/0000
Oil Spill No	
Pcb Content	

Comments

15-21-99 9-21-14

Fig. 2 b

BASI.IP2013

009250" 96508560

009250" 9E508560

Crew

Save Cancel

Crew

Crew Name
MIKE MOWLES
MIKE UNDERWOOD
GEORGE LYONS
VICTOR MARTINEZ
RED SIMPSON
ROOTS
eagle pipeline danny cobbs
ABLES
ROUND TREE
ROSS
CRABB
FRANCISCO

15-21-99 9:22:05

Crew Yard

Save Cancel

Crew Yard

Crew Name	Yard
Maintenance	ARLINGTON
BOBBIE KELLEY	DALLAS SW
JAMES PENDLETON	DALLAS SW
ERNE HALL	DALLAS SW
J. O. JONES	DALLAS SW
BILL LUSTIG	DALLAS SW
DARREN WOODARD	DALLAS SW
JAMES HENRY	DALLAS SW
RALF RIOS	DALLAS SW
GERALD MCKENZIE	DALLAS SW
LARRY GREESON	DALLAS SW
BOBBY HILL	DALLAS SW

15-21-99 9:22:24

Fig. 27

SOSF SECTION

Add New Transformers

Save Cancel

Add New Transformers

Details

TSN Manufacturer Yard

Identification

Company #	Serial #

15-21-09 0-22-18

Fill Orders

Cancel

Fill Orders

Location

Orders

Order/Line	TSN	Outst Qty
22610/1	310813-10 CV 7.2 240/480 2B	1

Company Numbers

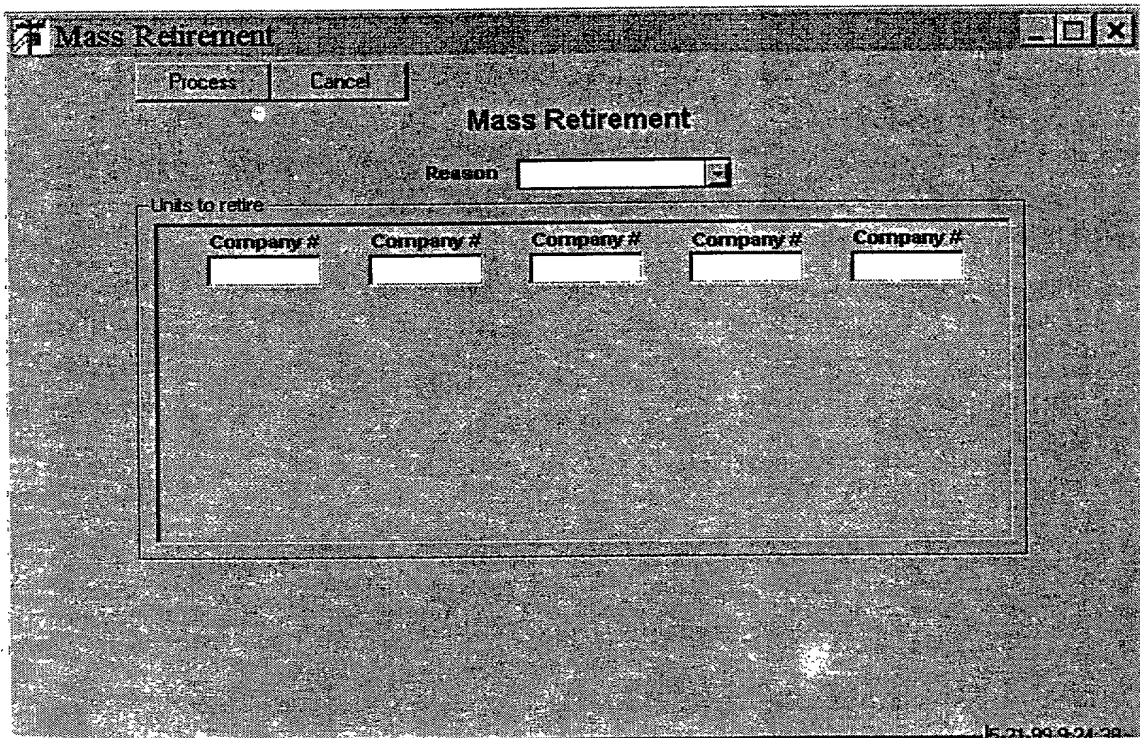
Company No	Company No	Company No	Company No	Company No
<input type="text"/>				

15-21-09 0-22-59

Fig. 28

009250" 9E508560

005250" 96508560



Mass Retirement

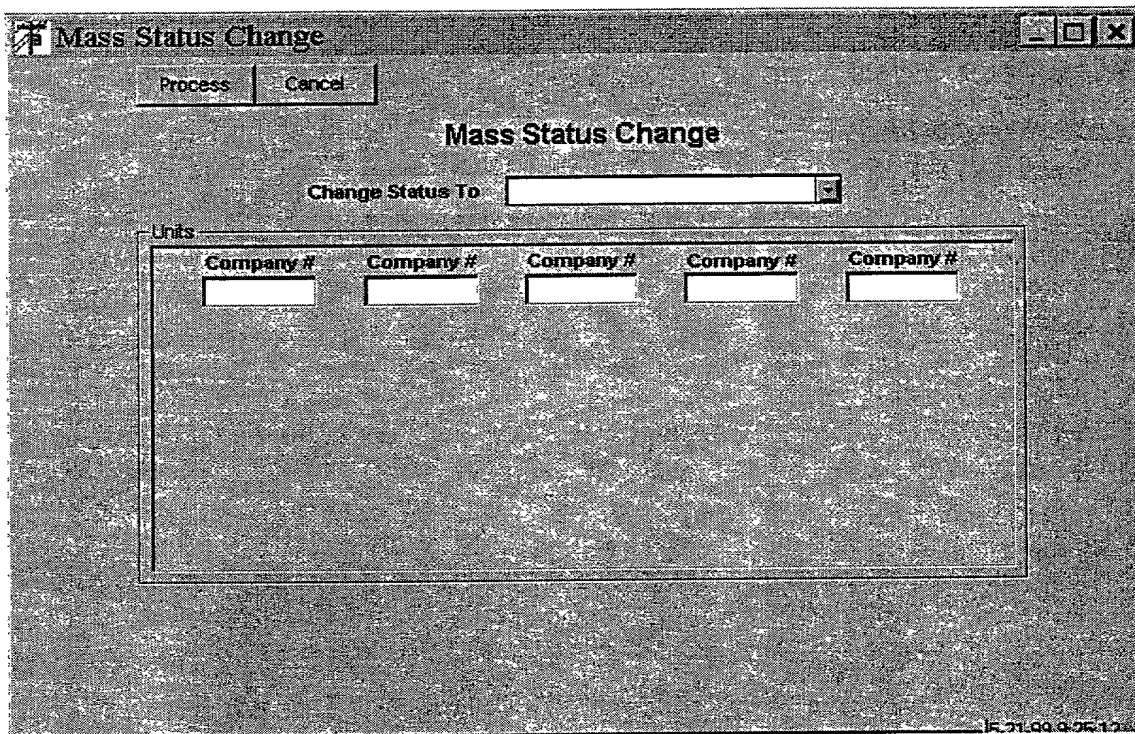
Process Cancel

Reason

Units to retire

Company #	Company #	Company #	Company #	Company #
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

15.01.00 0.01.20



Mass Status Change

Process Cancel

Change Status To

Units

Company #	Company #	Company #	Company #	Company #
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

15.01.00 0.05.12

Fig. 29

0050536 052600

Add Found Device

Add Cancel

Company No # Impedance
Serial # Weight
Manufacturer Oil Cap
Reason Oil Type
Status Vintage year
Yard Tsn

Search

Kva	Kind	Primary Voltage	Secondary Voltage
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Tsn	Tsn Desc
300755	10 CSP 7.2 120/240
300756	10 CSP 7620 120/240
300757	100 CSP 7620 120/240
300758	15 CSP 7.2 120/240

15-21-00 0-25-41

Repair

Save Cancel

Company # Invoice Date
Invoice Number Repair Vendor Repair Category
Repair Cost
Comments

Serial # Manufacturer
Status Serv Area / Yard
FLN Link From Company #
Link To Company #
Conversion TSN

15-21-00 0-25-10

Fig. 30

BASI.IP2013

009250:9E50B560

Company Number Change

Save Cancel

Company Number Change

Company No	9930900	New Company #	
Serial #	99J795042	Manufacturer	AB
Status	Available	Serve Area / Yard	HEB

15-01-00 0-22-07

Reclassification

Process Cancel

Reclassification

Company #	New Status	PR #	Construction Location
9930001			

Serial #	TSN	Description
99J780212	300948	50 DF 7.2 240/H 20 - II

15-01-00 0-20-12

Fig. 31

BASI.P2013

009250" 9E508560

Tsn Mfg Template

Tsn	Manufacturer	Imp	Weight	Oil Type	Oil Ga
310395	Kuhlman	1.80	435	LT 1 PPM	
310601	Kuhlman	1.90	845	LT 1 PPM	
300814	Nix Electric	2.20	860	LT 1 PPM	
310828	Nix Electric	2.30	250	LT 1 PPM	
310844	Nix Electric	2.00	840	LT 1 PPM	
321042	Nix Electric	3.50	1700	LT 1 PPM	
425687	ABB	1.96	3500	LT 1 PPM	

15.01.00 9:28:44

TRANSPORTATION SCREENS

Load Detail

Split Line Assign/Unassign to Load Change Route Create/Update Load Select All Cancel

Load Detail

Route # DALLAS NVV Load # ALL

To Yard	From Yard	Tsn	Description	Qty	Order No./Line
S O S	LAKE DALLAS	300755	10 CSP 7.2 120/240	1	
IRVING	S O S	300796	25 CV 14.4 120/240 1B	2	29963 /1
LAKE DALLAS	S O S	300796	25 CV 14.4 120/240 1B	1	29541 /1
LAKE DALLAS	S O S	300796	25 CV 14.4 120/240 1B	1	29497 /1
LAKE DALLAS	S O S	300796	25 CV 14.4 120/240 1B	1	29608 /1
LAKE DALLAS	S O S	300948	50 DF 7.2 240/120 - II	1	28609 /2
LAKE DALLAS	S O S	300948	50 DF 7.2 240/120 - II	4	28985 /1
S O S	LAKE DALLAS	310792	10 CV 7.2 120/240 1B	1	
LAKE DALLAS	S O S	310794	25 CV 7.2 120/240 1B	1	29759 /1
LAKE DALLAS	S O S	310794	25 CV 7.2 120/240 1B	1	29635 /1
LAKE DALLAS	S O S	310796	37 CV 7.2 120/240 1B	1	29507 /1
LAKE DALLAS	S O S	310803	10 CV 14.4 120/240 1B	1	26165 /1
LAKE DALLAS	S O S	310806	37 CV 14.4 120/240 1B	1	29758 /1
LAKE DALLAS	S O S	310806	37 CV 14.4 120/240 1B	1	26246 /1

15.01.00 9:50:24

Fig. 32

Create / Update Loads

Save Add Load Del Load Load Detail Reports Cancel

Create / Update Loads

Route
DALLAS NW

Planned Ship Date	Load #	Driver	Truck	Trailer	Shipper	Status
3/23/99	1967	Roy Holland	31354	31439	TU Electric	In Transit
3/31/99	1994	Billy Cathey	31234	30097	TU Electric	In Transit
4/28/99	2164	Billy Cathey	31234	30097	TU Electric	In Transit
4/13/99	2072	Billy Cathey	31234	30097	TU Electric	In Transit
4/20/99	2110	Billy Cathey	31234	30097	TU Electric	In Transit
4/20/99	2111	Roy Holland	31354	30079	TU Electric	In Transit
2/2/99	1664	Joe Glasgow	31355	31406	TU Electric	In Transit
2/16/99	1745	Billy Cathey	31234	30097	TU Electric	In Transit
5/4/99	2201	Billy Cathey	31234	30097	TU Electric	In Transit
2/9/99	1719	Billy Cathey	31234	30097	TU Electric	In Transit

5/21/99 9:49:36

Driver

Driver

Driver Name	Default Truck No
Curtis Carter	30839
Joe Cornwell	30322
Billy Cathey	31234
Joe Glasgow	31355
Mike Harris	31357
Jay Overbeck	30838
Rodney Mathers	31538
Roy Holland	31354

5/21/99 9:50:54

Fig. 33

BASI.P2013

009250" 9E508560

00580536 052600

Other Equipment Tsn

Other Equipment Tsn

Other Tsn	Other Tsn Desc	Other Unit Meas	Other Weight
310045	ENCLOSURE, SECONDARY	Each	1800
316031	CABINET, SWGR TERMIN	Each	1800
315000	OIL SWITCH	Each	500
397475	PALLET, WOOD 25X23	Pallet	30
397476	PALLET, WOOD 25X28	Pallet	35
397477	PALLET, WOOD 34X30	Pallet	40
397478	PALLET, WOOD 48X40	Pallet	50

Route

Route

Route Code	Route Name	Cut Off Day 1	Cut Off Hour 1	Ship Day 1	Cut Off Day 2	Cut Off Hour 2
01	WACO	Thursday	10	Monday		
03	TEXOMA	Thursday	10	Monday		
02	SOUTH	Thursday	10	Monday		
99	SPECIAL	Monday	10	Wednesday		
19	FT WORTH NORTH	Wednesday	10	Friday		

Fig. 34

009250" 92508560

Shipper	
Shipper Code	Shipper Desc.
B	Mashburn Co.
A	TJ Electric
C	Holloway Crane
D	Mill Call
	Hazel's Hotshot
	Texas Hot Shot

Trailer		
Trailer No.	Trailer Weight	Trailer License
30079	11300	X67559
30080	11400	X67560
30081	11000	X67566
30082	11300	X67567
30083	11400	X67561
30084	11300	X67562
30085	11300	X67563

Fig. 35

BASI.IP2013

009250" 9E508560

Truck		
Truck No	Truck Weight	Truck License
31538	15500	RH1261
31536	17740	2DJ649
31357	27382	2DJ643
31355	28120	2BA826
31354	27140	2DJ640
31234	15300	2DJ550
30839	22300	2DJ363
30838	22300	2DJ362

TABLE MAINTENANCE SECTION

Manufacturer	
Mfg Code	Mfg Desc
ME	McGraw Edison
AB	ABB
CN	Central
CP	Cooper
KU	Kuhlman
AC	Allis Chalmers
AM	American
CH	A.B. Chance

Fig. 36

009250" 96508560

Activity

ActivityCode	Activity Description
AF	Add Found
CH	Nameplate Change
CO	Changeout
IN	Install
PR	Test Results
RC	Reclassification
RM	Removal
RP	Repair

15.21.00 0:54:45

Activity Reason

Activity	Reason
Retirement	Junk
Retirement	Lost
Retirement	Obsolete
Retirement	Sold
Retirement	Data Correction
Retirement Rev	Buy Back-Repurchase
Changeout	Conversion
Retirement Rev	Retired in Error

15.21.00 0:55:12

Fig. 37

BASLIP2013

005250" 95508560

Activity Reason Status

Activity Reason Status

Activity Code	Reason Code	Status Code
Retirement	Data Correction	Retired
Retirement	Sold	Retired
Retirement	Junk	Retired
Retirement	Lost	Retired
Retirement Rev	Buy Back-Repurchase	Damaged
Retirement Rev	Buy Back-Repurchase	Available
Retirement Rev	Retired in Error	Damaged
Retirement Rev	Retired in Error	Available

15-21-09 9:55:29

Area Crew HQ

Area Crew HQ

Serv Area	Crew HQ
Graham	BRC
Brownwood	DEE
Wichita Falls	WFS
Graham	GRH
Brownwood	BWD
Eastland	ESL
Brownwood	STP
Fl. Worth South	FWE

15-21-09 9:55:09

Fig. 38

BASLIP2013

09580536-052600

Area Security

Area Security

Default Serv Area	Additional Serv Area
Decatur	Lake Dallas
Arlington	HEB
ALL AREAS	Andrews
Arlington	Fort Worth N
Arlington	Grand Prairie
Big Spring	Lamesa
Big Spring	Midland
Brownwood	Eastland

15-21-00 0:55:42

Inv Yard Security

Inv Yard Security

Default Yard	Additional Yard
ALL YARDS	ARLINGTON
ALL YARDS	ATHENS
ALL YARDS	BIG SPRING
ALL YARDS	BROWNWOOD
ALL YARDS	CLEBURNE
ARLINGTON	CLEBURNE
BIG SPRING	LAMESA
BROWNWOOD	STEPHENVILLE

15-21-00 0:57:10

Fig. 39

BASI.IP2013

009250" 9E508560

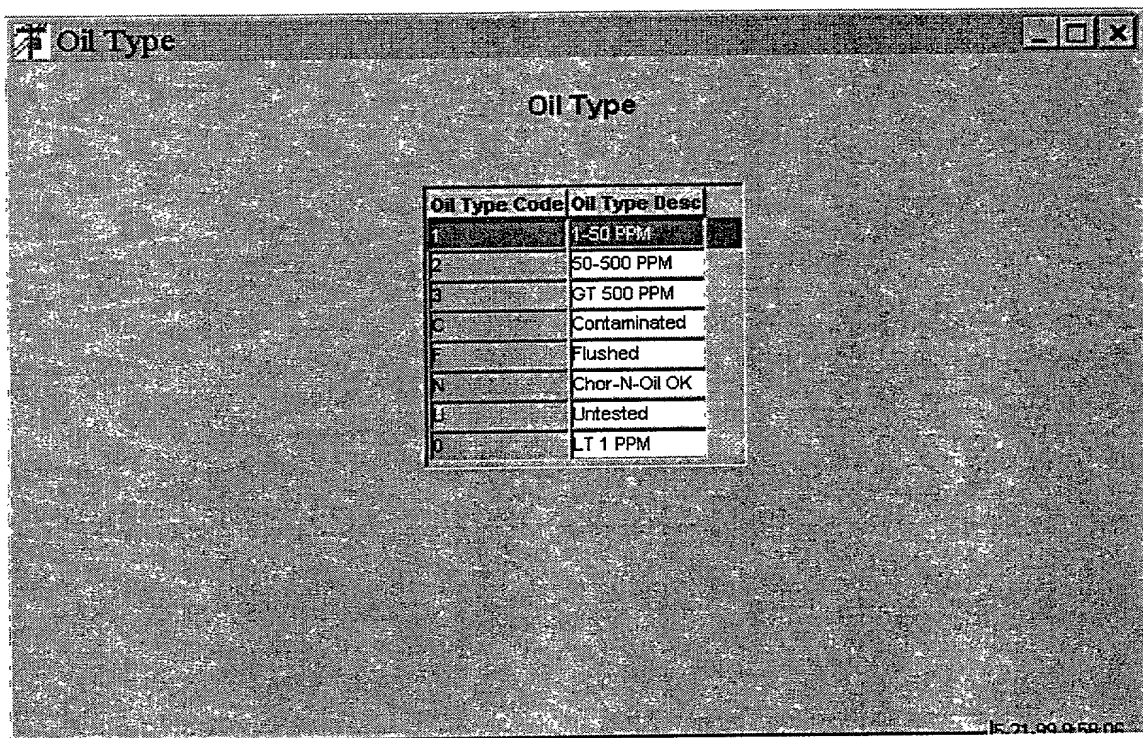
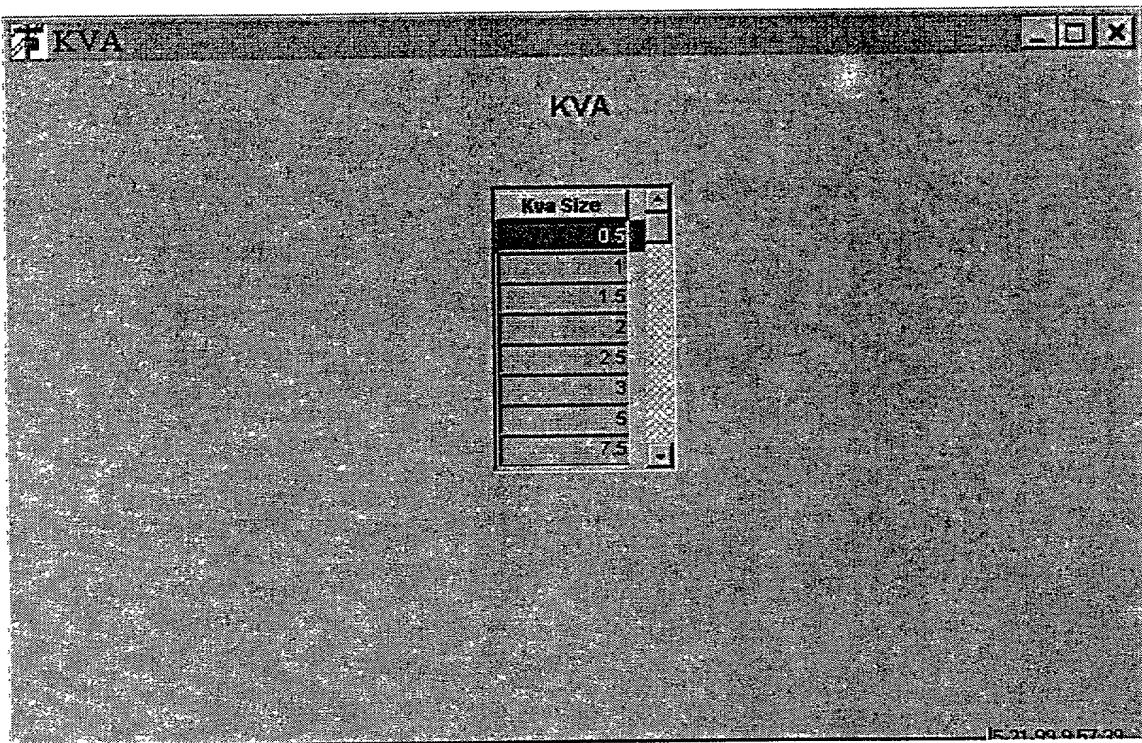


Fig. 40

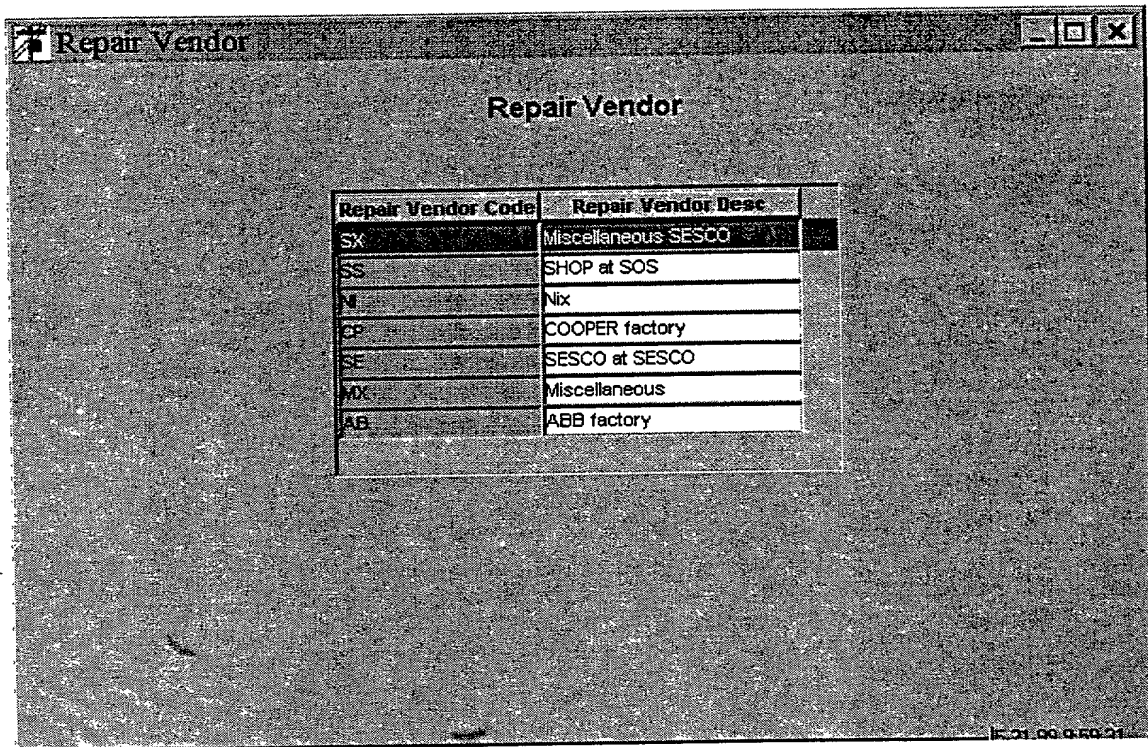
009250" 9E508560

Reason	
Reason Code	Reason Desc
AC	Address Change
RP	Repair
LS	Lease
YC	Yard Change
SO	Sold
RD	Replace Damaged Unit
RC	Reclassify
PU	Purchased

Repair Cat	
Repair Cat	Repair Desc
1	Cat I
2	Cat II
3	Cat III
4	Conversion
0	Insp/Restk
5	Other
6	Mobile

Fig. 41

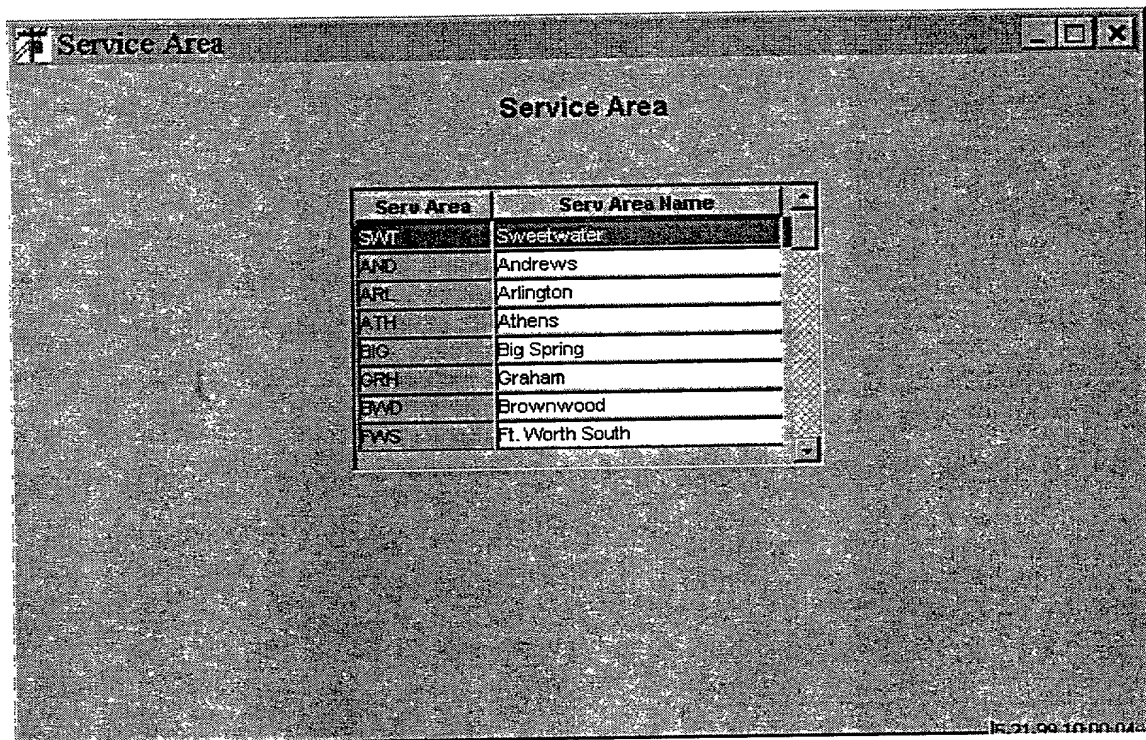
005250" 96508560



The screenshot shows a window titled "Repair Vendor" with a table listing various repair vendors. The table has two columns: "Repair Vendor Code" and "Repair Vendor Desc". The data is as follows:

Repair Vendor Code	Repair Vendor Desc
SX	Miscellaneous SESCO
SS	SHOP at SOS
N	Nix
CP	COOPER factory
SE	SESCO at SESCO
MX	Miscellaneous
AB	ABB factory

The window has a standard Windows-style title bar with minimize, maximize, and close buttons. A timestamp "15/01/00 0:50:21" is visible in the bottom right corner.



The screenshot shows a window titled "Service Area" with a table listing various service areas. The table has two columns: "Serv Area" and "Serv Area Name". The data is as follows:

Serv Area	Serv Area Name
SWT	Sweetwater
AND	Andrews
ARL	Arlington
ATH	Athens
BIG	Big Spring
GRH	Graham
BWD	Brownwood
FWS	Ft. Worth South

The window has a standard Windows-style title bar with minimize, maximize, and close buttons. A timestamp "15/01/00 10:00:04" is visible in the bottom right corner.

Fig. 42

009250" 9E508560

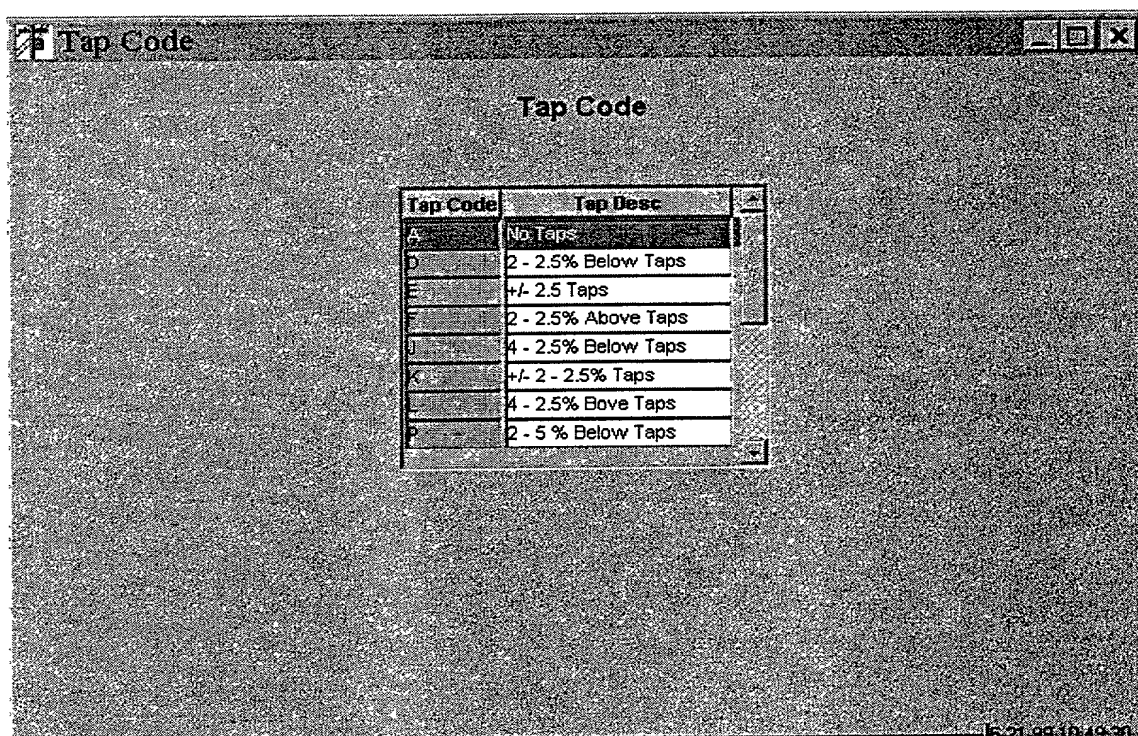
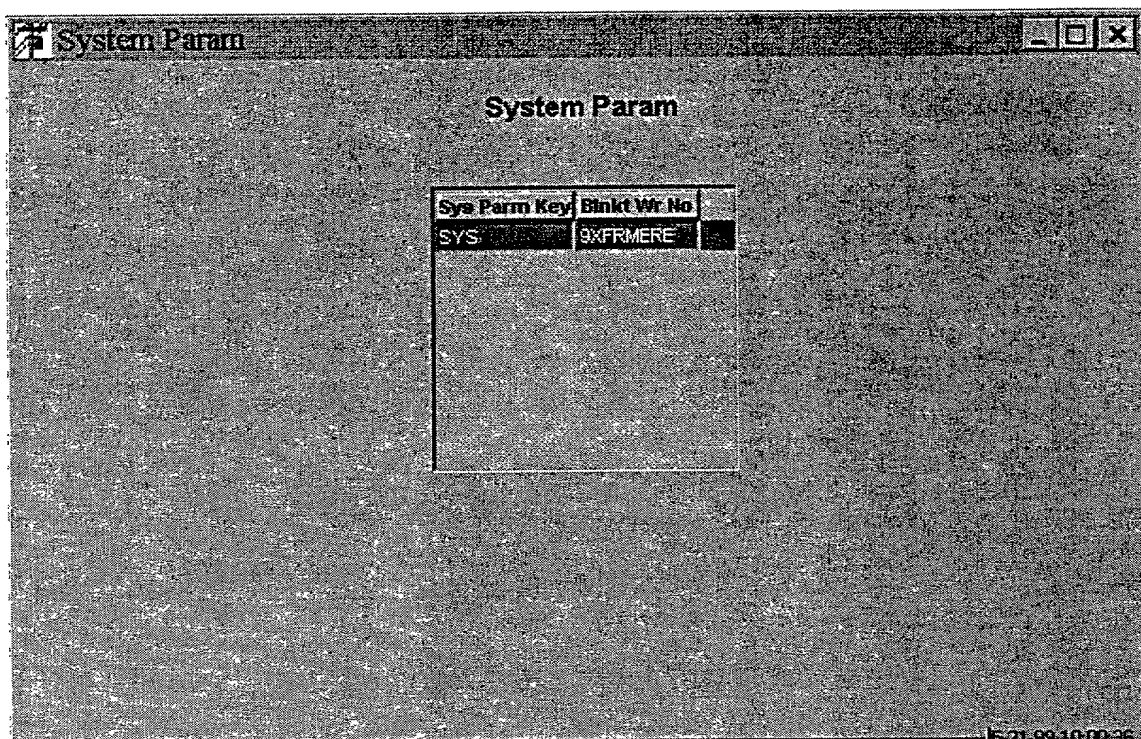


Fig. 43

009250" 92508560

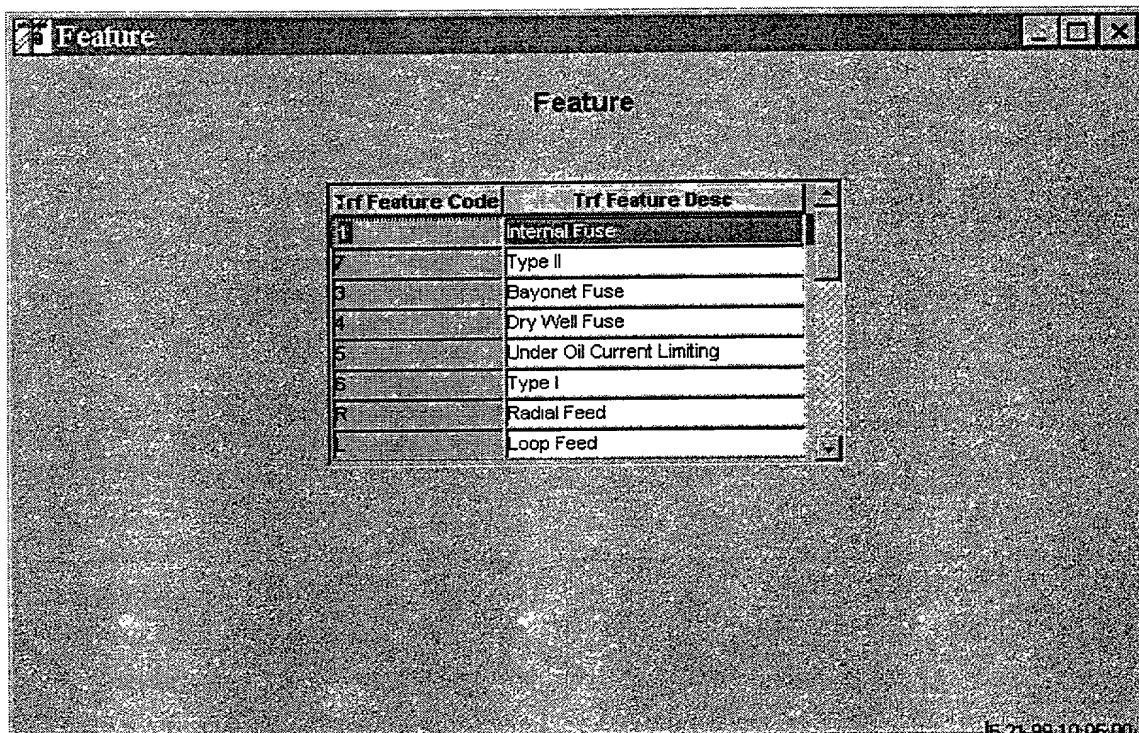
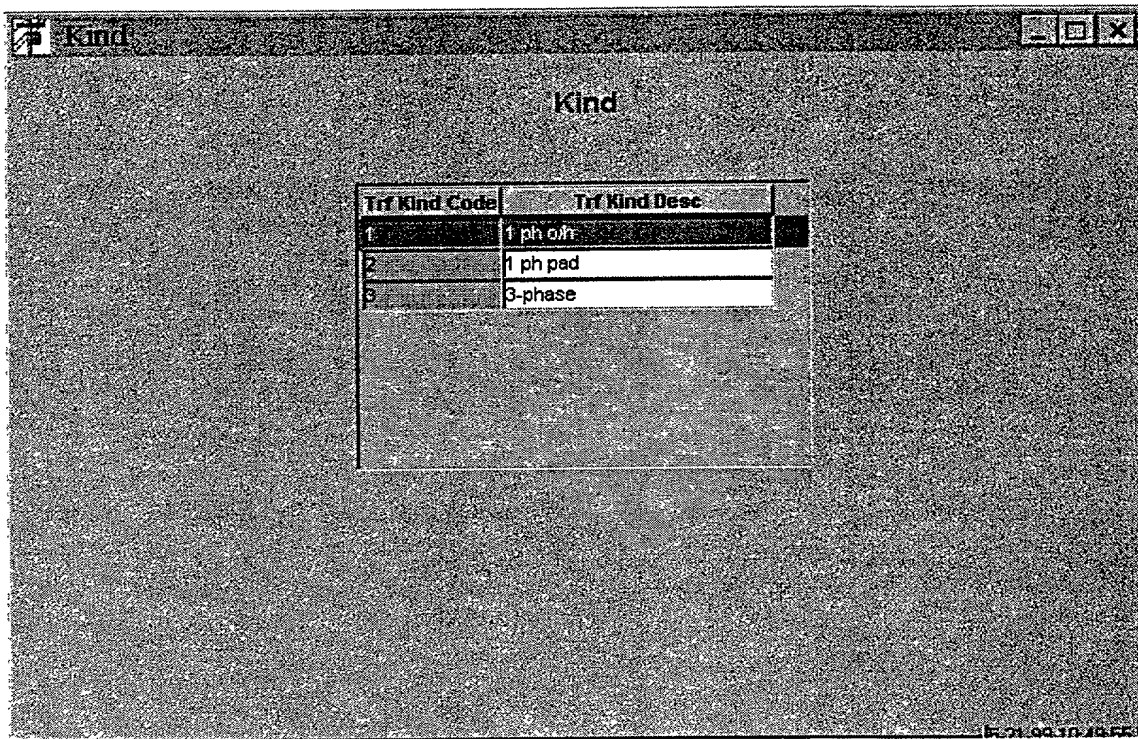


Fig. 44

00250" 9506560

Mount	
Trf Mount Code	Trf Mount Desc
1	POLE
2	CROSSARM
3	RACK
4	MAT
5	PAD
6	SUBMERSIBL
7	VAULT/MAT
8	WET VAULT

Status	
Trf Stat Code	Trf Stat Desc
111	Reserved
121	PENDING EVALUATION
123	Damaged
001	Active - Metered Load
002	Active - Unmetered Load
010	Spare on Site
011	Backup on Site (Energized)
020	Leased to Customer

Fig. 45

BASI.IP2013

009250" 92508560

Type	
Trf Type Code	Trf Type Desc
01	CSP
02	Conventional
04	Booster
05	Network
06	Dry
07	Auto
08	Duplex

TSN			
Tsn	Tsn Desc	Bb Code	Auto Reord Su
300777	100 CV 14400 240/480 2E	Y	
300781	100 CV 24940 GRDY/14400-277	Y	
300756	10 CSP 7620 120/240	Y	
300757	100 CSP 7620 120/240	Y	
300759	15 CSP 7620 120/240	Y	
300760	1.5 CSP 7620-120, 1 PH, 1 HV BU, 2 LV BU	Y	
300762	25 CSP 13200Y/7620-120/240V	Y	
300764	3 CSP 7620 120/240	Y	
300766	37 CSP 7620 120/240	Y	
300767	5 CSP 7620 120/240	Y	
300769	50 CSP 7620 120/240	Y	
300770	7 CSP 7620 120/240	Y	

Fig. 46

002250 " 92508560

Tsn Reorder by Yard		
Tsn Reorder by Yard		
Yard	Tsn	
FORT WORTH NORTH	490260	
FORT WORTH NORTH	490614	
FORT WORTH NORTH	490662	
FORT WORTH SOUTH	300915	
FORT WORTH SOUTH	300936	
FORT WORTH SOUTH	300938	
FORT WORTH SOUTH	300941	
FORT WORTH SOUTH	300952	

User Security			
User Security			
User Id	User Name	Inv Yard	Inst Remv Yard
RWQM	KYLE ROLLINS		PLANO
LLHE	STEVE MCCARLEY		PLANO
FJML	DIANN BUTLER	S O S	S O S
LLHG	PAUL BINNION		PLANO
ERTF	MARSHA ROGERS	ARLINGTON	ARLINGTON

Fig. 47

0058053.052600
002250" 9E508560

Volt Code		
Volt Supertype	Volt Subtype	Volt Desc
Wye Voltages < 230	C	208
Wye Voltages < 230	A	208Y/120
Wye Voltages < 230	B	216Y/125
< 100 & Other	A	12/24
< 100 & Other	X	Other
120, 240, 480 Delta	A	110/220
120, 240, 480 Delta	B	110, 115, or 120
120, 240, 480 Delta	C	120/240

Voltage Supertype	
Volt Supertype	Volt Supertype Desc
1	120, 240, 480 Delta
2	Wye Voltages < 230
3	Wye Voltages > 230
4	2400/4160 Volt Systems
5	Higher Voltages
6	14,400 System
7	7200 & 7620 Volt Sys
8	6000 - 6999

Fig. 48

BASLIP2013

00580535.052500

Yard					
Yard	Yard Name	White Sbat Fig	Route Code	Yard Address	
BWD	BROWNWOOD	Y	LEON	912 SHARP ST	BI
BON	BONHAM	N	TEXOMA	120 W. 5TH ST.	BC
GRH	GRAHAM	Y	NORTHWEST	145 TENNESSEE	GR
BIG	BIG SPRING	Y	WEST TEXAS	1701 I 20 WEST	BI
BBM	Big Brown Mine	N	SOUTHEAST	FM 1270	FA

Yard Crew HQ	
Crew HQ	Yard
AND	ANDREWS
FSE	ARLINGTON
ATH	ATHENS
BIG	BIG SPRING
BWD	BROWNWOOD
CLE	CLEBURNE
COR	CORSICANA
DNO	DALLAS NORTH

Fig. 49

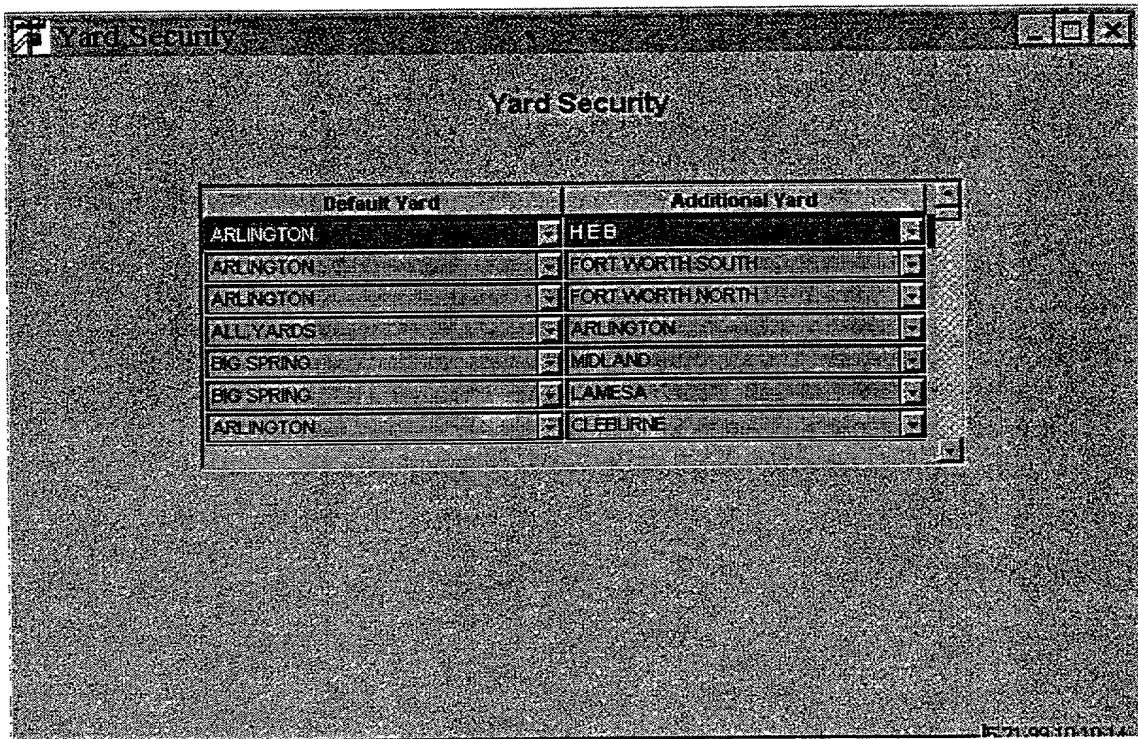


Fig. 50

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I declare:

that my residence, post office address, and citizenship are as stated below next to my name;

that I believe I am an original, first, and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention or design entitled *Equipment Information System and Method*, the specification of which is attached hereto;

that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above;

that I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in 37 C.F.R. § 1.56; and

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

None

I hereby claim the benefit under 35 U.S.C. 119(e) of any U.S. provisional application listed below:

U.S. Provisional Application Serial No.: 60/136,370

Provisional Filing Date: May 28,1999

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

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I hereby appoint:

John P. Pinkerton
Robert J. Ward

Reg. No. 28,746
Reg. No. 38,652

all of the firm of Worsham Forsythe Wooldridge, L.L.P., as my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith, and to file and prosecute any international patent applications filed thereon before any international authorities.

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* * * *

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